CITY OF SOUTH PASADENA
MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION
REGULAR MEETING AGENDA

Council Chamber
1424 Mission Street, South Pasadena, CA 91030
April 20, 2021, at 6:30 p.m.

South Pasadena Mobility and Transportation Infrastructure Commission Statement of Civility
As your elected governing board, we will treat each other, members of the public, and city employees with patience, civility and courtesy as a model of the same behavior we wish to reflect in South Pasadena for the conduct of all city business and community participation. The decisions made tonight will be for the benefit of the South Pasadena community and not for personal gain.

NOTICE ON PUBLIC PARTICIPATION & ACCESSIBILITY

Pursuant to Section 3 of Executive Order N-29-20, issued by Governor Newsom on March 17, 2020, the regular meeting of the Mobility and Transportation Infrastructure Commission (MTIC) for April 20, 2021, will be conducted remotely and held by Zoom video conference.

Please be advised that pursuant to the Executive Order, and to ensure the health and safety of the public by limiting human contact that could spread the COVID-19 virus, the Council Chambers will not be open for the meeting. Commission Members will be participating remotely and will not be physically present in the Council Chambers.

To maximize public safety while still maintaining transparency and public access, members of the public can observe the meeting via Zoom in one of the three methods below.

Mobility and Transportation Infrastructure Commission
Zoom Meeting Information
Meeting ID: 894 2745 6783
Passcode: 441109

1. Go to the Zoom website, https://zoom.us/join and enter the Zoom Meeting information accordingly; or
2. Click on the following unique Zoom meeting link: https://us02web.zoom.us/j/89427456783?pwd=Y3dCcDlCbU5nczJLRkl2dlg4VjR0Zz09 or
3. You may listen to the meeting by calling: +1-669-900-6833 and entering the Zoom Meeting ID and Passcode when prompted to do so.

For additional Zoom assistance with telephone audio, you may find your local number at: https://us02web.zoom.us/u/ky9n7bhtz

IMPORTANT NOTE: Members of the public may access the meeting to observe the meeting's proceedings; however, at this time, there is no live, real-time participation by members of the public.

PUBLIC COMMENT
If you would like to comment on an agenda item, members of the public may submit their comments in writing for consideration, by emailing comments or questions to: mticpubliccomments@southpasadenaca.gov. **Public Comments must be received by 12:00 p.m., April 20, 2021** to ensure adequate time to compile and post. Public Comment portion of the email is limited to 250 words. Please make sure to indicate: 1) your name; 2) what agenda item you are submitting public comment on, or if it is a general public comment; and/or 3) clearly state if you wish for your comment to be read during the meeting.

CALL TO ORDER: Commissioner Abelson

ROLL CALL: Commissioners: Lawrence Abelson, Eric Dunlap, John Fisher, Kimberley Hughes, and Donson Liu

CITY COUNCIL LIAISON: Councilmember Jon Primuth

STAFF PRESENT: Garrett Crawford, Acting Deputy Director of Public Works, and Leaonna DeWitt, Public Works Assistant

PLEDGE OF ALLEGIANCE: Commissioner Donson Liu

PUBLIC COMMENT AND SUGGESTIONS

1. Public Comment – General

ACTION ITEMS

2. Minutes of the Regular Mobility and Transportation Infrastructure Commission on March 16, 2021

3. Proposed Stop Signs on Meridian Avenue at Oak Street, Pine Street and Maple Street

COMMISSION LED DISCUSSION

4. SR 710 Mobility Improvement Projects Ad Hoc Committee

5. COVID-19 Ad Hoc Committee
Metro Open Streets Grant

6. Discussion of Local Return Measure M Projects (staff to provide update)

7. Fremont Avenue Projects

COMMUNICATIONS

8. City Council Liaison Communications

9. Commissioner Communications

10. Staff Liaison Communications
Rogan Fund Project Update

ADJOURNMENT

FUTURE MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION MEETINGS

May 18, 2021	TBD	6:30 p.m.
June 15, 2021	TBD	6:30 p.m.

PUBLIC ACCESS TO AGENDA DOCUMENTS AND BROADCASTING OF MEETINGS

Commission Meeting agenda packets are available online at the City website: https://www.southpasadenaca.gov/government/boards-commissions/mobility-and-transportation-infrastructure-commission

ACCOMMODATIONS

The City of South Pasadena wishes to make all of its public meetings accessible to the public. If special assistance is needed to participate in this meeting, please contact the City Clerk's Division at (626) 403-7230. Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities. Notification at least 48 hours prior to the meeting will assist staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting (28 CFR 35.102-35.104 ADA Title II).

I declare under penalty of perjury that I posted this notice of agenda on the bulletin board in the courtyard of City Hall at 1414 Mission Street, South Pasadena, CA 91030, and on the City's website as required by law.

4/14/21 /s/
Date Leaonna DeWitt
Public Works Assistant

ITEM 2

Minutes of the Regular Mobility and Transportation Infrastructure Commission – March 16, 2021

TUESDAY, MARCH 16, 2021
MINUTES OF THE CITY OF SOUTH PASADENA
REGULAR MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION

CALL TO ORDER
The Regular Meeting of the Mobility and Transportation Infrastructure Commission was called to order by Commissioner Abelson on March 16, 2021, at 6:33 p.m. The meeting was held in a virtual setting, via Zoom.

ROLL CALL: Leaonna DeWitt, Public Works Assistant

PRESENT: Commissioner Abelson, Commissioner Dunlap, Commissioner Fisher, Commissioner Hughes, Commissioner Liu and Mayor Mahmud.

COUNCIL LIAISON: Councilmember Jon Primuth

ABSENT:

STAFF PRESENT: Shahid Abbas, Public Works Director, Garrett Crawford, Acting Deputy Public Works Director and Leaonna DeWitt, Public Works Assistant

PLEDGE OF ALLEGIANCE
Commissioner Dunlap led the pledge of allegiance.

PUBLIC COMMENT
1. Public Comment

1. Ann Rector expressed concern with the traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She mentioned illegal trucks and requested a traffic study be completed.

2. Sarah Aguilar expressed concern with the traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She referenced two accidents and requested a traffic study be completed.

3. Caroline Howell expressed concern about speeding and traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She has requested a traffic study be completed.

4. Victoria Eaton expressed concern with traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She requested a traffic study be completed.

5. Julian Cardenas expressed concern regarding speeding and dangerous activity on Orange Grove Avenue and believes improved traffic safety measures will decrease the conditions on Orange Grove Avenue.

6. Frank Cardenas expressed concern regarding dangerous traffic on Orange Grove Avenue and requested a comprehensive speed-reduction measures and redesign of Orange Grove Avenue.

PRESENTATION
2. Re-appropriation of Metro Open Streets Grant
Wes Reutimann, Active San Gabriel Valley, gave a brief presentation on this item. Because of the pandemic, the plan for the "Mission to Mission" and ArroyoFest like events for 2020 were cancelled. There had been funding allocated to the City to support the event, which would retained at the City's request.

A defined scope of work will need to be completed before the proposal goes to the City Council for review.

Discussion ensued regarding the funding, as well as partnering with other cities, and community programs,

ACTION ITEMS

3. Minutes of the Regular Mobility and Transportation Infrastructure Commission on February 16, 2021 - Minutes approved as amended. (Hughes, Fisher; 5-0)

DISCUSSION ITEMS

4. Preferential Parking Policy

Acting Deputy Director Crawford gave a brief overview of this item. Commissioner Liu summarized the City of Pasadena's preferential parking program.

PWD Shahid Abass requested that the Commission discuss this item and staff would bring back a more comprehensive policy for review.

Discussion ensued regarding the existing parking districts, limited areas of the City. There was discussion about if the areas should be expanded and that it was key to maintain a balance.

The Commissioners agreed to move forward with the development of some criteria for a parking district. Staff will do some additional research in regards to if there is an existing or past policy and work with Commissioners suggestions/recommendations. After the research is completed, the staff will bring the issue will be placed as a future commission agenda, as an action item-preferential parking policy.

COMMISSION LED DISCUSSIONS

5. SR 710 Mobility Improvement Projects Ad Hoc Committee

No update. Commissioner Abelson is supporting the development of a draft RFP and scope of work for a study of the SR-110 and Fair Oaks interchange. The planned studies would be used to support the initial environmental study.

6. COVID-19 Ad Hoc Committee

Commissioner Liu reported that there had been meetings with the former commissioners that were on the COVID-19 Ad Hoc Committee. He also spoke with the CEO Laurie Wheeler about the business community. There is interest in weight lining signage and moving forward this will be a safer configuration for bicyclists and pedestrians. The plan is to engage the business community and city outreach to local businesses. Areas of focus will include: 1) collect their experience working with the city 2) experience with outdoor dining aspect and explore long term configurations. 3) Explore installation of parklets. 4) Identify public parking that could become a parklet. 5) Restaurants that are dining in their parking lots – small reduction or reallocation of parking can help local businesses and economy. Suggestion: Staff engage with Arroyo Fest Fund.

7. Ramona Avenue Neighborhood Traffic Management Plan

Commissioner Abelson and Vice Chair Fisher took a tour of the location. The group also said that when the high school begins classes on campus in April that the situation can be evaluated and solutions considered.

Fisher surveyed the high school and holy family. What was viewed was loading on Rollin St. and is not allowed on Fremont Avenue (red curb in front). Traffic entering Holy Family school 7:30-8:10 and traffic queues on Oak St. and then enter the parking lot. Load students and exit from the Rollin street gate. One key to address the issue is looking at the drop areas and circulation and vehicular routes to the school.

Public Comment

1. Craig Erickson expressed concern regarding the traffic and safety issues on Ramona Avenue. He suggested to stagger the start times and take away the Holy Family drop off.

8. Discussion of Local Return Measure M Projects for FY 2022

Commissioner Abelson gave a background information on this item. Discussion ensued regarding projects. was a

Councilmember Primuth reported that funds have not yet been identified to match the existing Rogan Funds. The Commission agreed that the Measure M funds $1.7 million allocated to the City should not be used as a match to the Rogan funds.

The Commission agreed to go back to the original project list for consideration of use of the Measure M funds.

COMMUNICATIONS

9. City Council Liaison Communications

Council Liaison Primuth commented that the FY 20-21 Budget will be presented at tomorrow night's City Council meeting.

10. Commissioner Communications

Commissioner Dunlap commented that the drive through food distribution set-up at Holy Family partnership with Barber's office is very well organized.

Commissioner Hughes thank everyone for the voting on the UUT and Measure A, which passed. The funding really helped the city weather the pandemic.

Commissioner Abelson commented that it would be helpful if the commission could receive accident data, as it would help to identify possible troubled traffic locations. He also commented that he was traveling on Oak St. and it was very heartwarming to see the kids walking to Marengo Elementary. It might be helpful if when the City Council take action on projects or talk about presenting an issue to the MTIC, that the commission can be made aware when this happens. It could then generate an agenda item.

11. Staff Liaison Communications

Acting Deputy Director Crawford advertised the Dedication Tree Program.

ADJOURNMENT: Meeting adjourned at 10:07 p.m.

I HEREBY CERTIFY that the foregoing minutes were adopted by the Mobility and Transportation Infrastructure Commission of the City of South Pasadena at a meeting held on March 16, 2021.

_____

Larry Abelson, Chair

PUBLIC COMMENT

MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION MEETING

March 16, 2021

Item No.	Name	Document	Date Received
GC	Ann Rector	E-mail Public Comment	3/06/2021
GC	Sarah Aguilar	E-mail Public Comment	3/07/2021
GC	Caroline Howell	E-mail Public Comment	3/08/2021
GC	Victoria Eaton	E-mail Public Comment	3/09/2021
GC	Julian Cardenas	E-mail Public Comment	3/16/2021
GC	Frank Cardenas	E-mail Public Comment	3/16/2021
Item 7	Craig Erickson	E-mail Public Comment	3/16/2021

From: Ann Rector <annrector80@gmail.com>
Sent: Saturday, March 6, 2021 4:17 PM
To: MTIC Public Comments
Subject: March 16, 2021 MTIC - PUBLIC COMMENT

Follow Up Flag: Follow up
Flag Status: Flagged

My name is Ann Rector. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 217 Orange Grove Ave. in South Pasadena. My family has lived on this property since 1960 or over 60 years. I am commenting this evening because of the dangerous traffic on Orange Grove Ave. between Columbia St. and the 110 Freeway. This approximate one-quarter mile of Orange Grove Ave. has a long history of accidents, reckless driving, property damage (both City and Private), and illegal freight trucking. (North and Southbound)

Due to the ongoing, chronic safety hazards, including two recent horrible traffic accidents on Orange Grove Ave, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of the traffic.

Thank you - Ann Rector
Owner 217 Orange Grove Ave. South Pasadena CA 91030
562-858-0950

From: Sarah Aguilar <aguilar.sarahrector@gmail.com>
Sent: Sunday, March 7, 2021 1:31 PM
To: MTIC Public Comments
Subject: Sarah Rector Aguilar aguilar.sarahrector@gmail.com

Follow Up Flag: Follow up
Flag Status: Flagged

My name is Sarah Rector Aguilar. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 301 Orange Grove Avenue in South Pasadena. My family has lived on this property since 1960 or over the 60 years, I am commenting this evening because of the dangerous traffic on Orange Grove Avenue between Columbia Street and the 110 Freeway. This approximate one-quarter mile of Orange Grove Avenue has a long documented history of car accidents. In fact, not only have two street lights, directly in front of my house, been taken out by car accidents, but my irrigation system next to those street lights received major damage.

Due to the ongoing chronic safety hazards, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of traffic.

Thank you - Sarah Rector Aguilar
owner 301 Orange Grove Avenue, South Pasadena CA. 91030
626 864 0010

From: Caroline Howell <caroline.r.howell@gmail.com>
Sent: Monday, March 8, 2021 7:30 AM
To: MTIC Public Comments
Cc: Nick Howell
Subject: Public comment for MTIC

Follow Up Flag: Follow up
Flag Status: Flagged

I am Caroline Howell and would like this General Public Comment read aloud at your upcoming meeting:

We own a home at 300 Orange Grove Avenue (corner of Oliver Street) where we have lived for 4 years. We are very concerned about the speeding, reckless driving and dangerous traffic on Orange Grove Avenue between Columbia and the 110 Freeway. We have witnessed numerous accidents and an untold amount of speeding in this corridor next to our home. Last month, our 17-year-old son heard a horrific accident in the middle of the night and ran out to call 9-1-1, and witnessed a car totaled with 4 passengers. Please consider a traffic study to evaluate what can be done to make this a safer area.

Thank you,
Caroline & Nick Howell
Owners, 300 Orange Grove Avenue, South Pasadena
(626) 390-3108

From: Victoria Eaton <veaton@me.com>
Sent: Tuesday, March 9, 2021 4:06 PM
To: MTIC Public Comments
Subject: Drive like your kids live here

Follow Up Flag: Follow up
Flag Status: Flagged

My name is Victoria Eaton. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 411Prospect Circle in South Pasadena. My family has lived here for 8 years. I am commenting this evening because of the dangerous traffic on Orange Grove Ave. between Columbia St. and the 110 Freeway and on Meridian Ave . This one-quarter mile of Orange Grove Ave. has a long documented history of accidents, reckless driving, property damage (both City and Private) as well as the high speeds on Meridian Avenue.

Due to the ongoing, chronic safety hazards, including two recent horrible traffic accidents on Orange Grove Ave, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of the traffic.

Thank you,

Victoria Eaton
M.Ed., Lesley University
Children's yoga instructor
Certified by mini yogis
Movement and Mindfulness Curriculum Certified http://move-with-me.com/
KAY (Kidding Around Yoga) certified
http://kiddingaroundyoga.com/

From: Julian Cardenas <jcardenas20@unm.edu>
Sent: Tuesday, March 16, 2021 10:29 AM
To: MTIC Public Comments
Subject: 3/16 MTIC Meeting - Resident Public Comment

Follow up to Frank Cardenas's statement - I would like my general public comment to be read into the record during the meeting:

The majority of the time that I walk or drive by Orange Grove Avenue, I see speeding, dangerous merging, street racing, or near-collisions. Most recently, I heard and responded to a serious traffic collision on southbound Orange Grove near Oliver Street, not 200 yards from our home. When I arrived on scene (before PD and Fire), I found a young woman bleeding from a large gaping hole in her skull and who had traumatic deformities to her legs. She was partially ejected from the vehicle, disoriented, crying, and begging to see her mother. Another young woman was lying inside of nearby bushes with other injuries. The car they were riding in had crashed into a rock wall, demolished a light pole, and injured a tree before coming to a rest after careening off the Avenue. As an emergency medicine student, I firmly believe that improved traffic safety measures, diligent supervision by our Police Department, and attention by City Administration will decrease the amount of human pain and suffering caused by the dangerous conditions on Orange Grove Avenue that have been allowed to persist for decades on end.

With appreciation for your service,
Julian Cardenas
451 Prospect Circle

Julian C. Cardenas, EMT
Registered Emergency Medical Technician
Emergency Medical Services Major
University of New Mexico
UNM ID 101901596

SCHOOL OF MEDICINE
EMERGENCY MEDICAL SERVICES ACADEMY

"Each of us defines all of us"

From: Frank Cardenas <frank@frankcardenas.com>
Sent: Tuesday, March 16, 2021 10:58 AM
To: MTIC Public Comments
Subject: General Public Comment - Mobility and Transportation Infrastructure Commission

Honorable Members of the Mobile and Transportation Infrastructure Commission:

My name is Frank Cardenas. My family has lived at the corner of Prospect Drive and Prospect Circle for over 20 years. It's the only home our three children have ever known. We love our neighborhood and we love our town. To live in our neighborhood, however, is to live with the reality that at any moment the regular, dangerous driving behaviors on Orange Grove Avenue - particularly of southbound motorists - can result in tragedy. Of the many crashes on Orange Grove between Mission and Columbia, perhaps the most gruesome occurred about four weeks ago when our nineteen-year old son, a trained Emergency Medical Technician, found himself racing from our home to respond to a car crash on Orange Grove just south of Columbia, quite apparently caused by speeding.

Our son is submitting as Public Comment to your commission his description of the horrific human tragedy that he encountered as he assisted two women who had been thrown from the vehicle. This latest tragedy is but the most recent indication that the traffic calming measure of a redesigned median about 18 years ago, and the installation of two new stop signs in the Prospect-Meridian Neighborhood about ten years ago, are no longer adequate. The situation on and around Orange Grove has gotten worse and new measures are needed. The time has come to investigate, with the City of Pasadena, new, comprehensive speed-reduction measures, including a possible redesign of Orange Grove. Thank you.

Frank Cardenas

Frank C. Cardenas

Frank Cardenas and Associates
C: 213.220.4444
E: frank@frankcardenas.com

From:	Craig Erickson <opsmojo@gmail.com>
Sent:	Tuesday, March 16, 2021 10:19 AM
To:	MTIC Public Comments
Subject:	Ramona Avenue Neighborhood Traffic Management Plan Ad Hoc Committee-Public Comment
Attachments:	HF Traffic 1.jpg; HF Traffic 4.jpg; HF Traffic 3.jpg; HF Traffic 2.jpg

Craig Erickson
Ramona Avenue Neighborhood Traffic Management Plan Ad Hoc Committee
Please read the comment during the meeting.

I live at 1545 Ramona Ave, on the corner of Ramona and Oak. I watch every morning as the cars for Holy Family line up down Ramona and cause traffic and safety issues in the neighborhood. I have reviewed the November 2019 Traffic Management Plan. While it does suggest some reasonable solutions. It does nothing to address the root of the problem. None of these solutions will reduce the traffic flow. The root of the problem is all the traffic from the Holy Family drop off. There also needs to be better enforcement of drop off at the High School.

I believe that the simplest and most cost effective solution is to stagger the start times and take away the Holy Family drop off, especially since 90% of the students are from outside South Pas. They should utilize the 75 spots in their other lot. Their reason for not doing this is the students having to cross Fremont. Students at every other school in the district cross busy streets everyday. Not only is there a traffic light, they can move the nice lady who watches the driveway to the Fremont/Oak intersection to act as a crossing guard.

While they are very concerned with the safety of their students they don't seem to have the same concern for the other students and residents of the neighborhood. The parents have a total disregard for the neighborhood and traffic laws. They are constantly making u turns and stopping in the crosswalks both on Ramona and Oak. The traffic back up also causes other drivers to lose patience and not make the safest driving choices.

Thank you.

Craig Erickson

ITEM 3

Proposed Stop Signs on Meridian Avenue at Oak Street, Pine Street and Maple Street

Mobility & Transportation Infrastructure Commission Agenda Report

ITEM NO. 3

DATE: April 20, 2021

FROM: Garrett Crawford, Acting Deputy Public Works Director

SUBJECT: **Update on the Multi-Way Stop Signs Study for Meridian Avenue at Oak Street, Pine Street, and Maple Street**

Recommendation

It is recommended that the Mobility and Transportation Infrastructure Commission (MTIC):

- Receive and file the Multi-Way Stop Sign Analysis Update, and make a recommendation to the City Council for traffic controls on Meridian Avenue at Oak Street, Pine Street, and Maple Street, or
- Provide guidance to the staff on how to proceed further on this report.

Background

In response to the request by the residents of Meridian Avenue, W.G. Zimmerman Engineering, Inc. prepared a stop sign analysis for Meridian Avenue at Oak Street, Pine Street, and Maple Street (Engineer's Study) on May 6, 2020 (Attachment 1). The study concluded that the subject intersections do not meet the California Manual of Uniform Traffic Control Devices (CAMUTCD) criteria for Multi-Way Stop Application in Section SB.07.

On August 5, 2020, staff presented the Engineer's Study's findings to the City Council. Subsequently, at October 7, 2020, Council Meeting, Council directed staff to conduct a new traffic study at the above intersections.

Recently in March of this year, the Interwest Consulting Group conducted a Peer Review of the original Engineer's Study (Attachment 2). Their review consisted of evaluating field and site conditions, vehicular and non-vehicular traffic operations on Meridian Avenue, and side streets, including turning movements at the three locations. The review validated the findings of W.G. Zimmerman Engineering stop sign analysis.

Discussion

Subsequent to the Peer Review, the City consulted with Rock E. Miller & Associates (Miller Report), who prepared a report, "Review and Evaluate Traffic Control needs on Meridian Avenue," dated April 13, 2021 (Attachment 3). The report identifies alternative criteria in CAMUTCD that may be considered for installing multi-way stop signs on neighborhood local residential streets when if specific safety concerns exist. The MUTCD Section 2B.07 states as follows:

"Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."

This section of CAMUTCD intends to apply an alternative criterion as a safety measure, but it may not support its application when there are no identifiable safety concerns. Following are the major conclusions of the Miller's Report:

- Oak Street and Meridian Avenue: Based on the unique intersection geometrics, the marked school crossing at the south leg, and the street usage further to the east. The report recommends a multi-way stop sign control at this location.
- Maple Street and Meridian Avenue: The report cites higher traffic volumes and restricted sight distance as a factor for installation of a multi-way stop sign control while noting that sight distance is good and could further improve by painting additional red curb, which would result in a safer and better operation of the intersection. Therefore, staff does not recommend a multi-way stop sign control at this location.
- Pine Street and Meridian Avenue: The report finds lower traffic volumes compared to the other locations with the fewest distinguished factors for installing an all-way stop sign control. The report also recommends an additional red curb to improve sight distance. Given these factors, staff does not recommend a multi-way stop sign control at this location.

The report also suggests that if the City chose to deviate from CAMUTCD warrants and install an all-way stop sign, it must consider how it might apply to other intersections in the City. This will set a precedent, which may lead to the installation of many stop signs at intersections with similar characteristics. Therefore the report recommends adopting new guidelines for installing a multi-way stop controls on local residential streets. The report provides no additional engineering data on existing conditions.

Fiscal Impact
The cost of installing the stop signs and stop ahead signs is estimated to be $2,000. If approved, Public Works will use its exiting operating funds to manufacture and install the signs.

Public Notification of Agenda Item
The public was made aware that this item was to be considered this evening by virtue of its inclusion on the legally publicly noticed agenda, posting of the same agenda, and reports on the City's website and/or notice in the *South Pasadena Review* and/or the *Pasadena Star-News*.

Attachments:

1. Engineer's Study
2. Peer Review - Interwest
3. Miller Report

ATTACHMENT 1

Engineer's Study

May 6, 2020

MEMORANDUM

Shahid Abbas
Director of Public Works
City of South Pasadena
1414 Mission Street
South Pasadena, CA 91030

Stop Sign Analysis: Meridian Avenue at Oak Street, Pine Street, and Maple Street

Dear Mr. Abbas:

The purpose of this memorandum is to present the findings of a Stop Sign Analysis related to the proposed installation of a Stop Sign at three (3) intersections along Meridian Avenue. The three intersections are at Oak Street, Pine Street, and Maple Street. An aerial map of the locations is provided as Exhibit A.

The stop sign analysis was based upon the Manual on Uniform Traffic Control Devices, 2009 Edition, produced by the Federal Highway Administration (FHWA) which was amended in 2014 by the California Department of Transportation and also considered street geometry, sight distance, safety, and traffic patterns.

California Manual of Uniform Traffic Control and Devices (CA MUTCD) Criteria:

The California Manual of Uniform Traffic Control Devices, 2014 Edition (CA MUTCD) provides guidance and criteria for Multi-Way STOP Applications in Section 2B.07. A stop sign should not be installed unless one or more of these criteria is met. Section 2B.07 of the CA MUTCD recommends that engineering judgment be used in the evaluation of the criteria to ensure that a stop sign will improve the overall safety and/or operation of the intersection. Typically, multi-way stop control is used where the volume of traffic on the minor road is approximately equal to the major road.

As per Section 2B.07 of the CA MUTCD, the decision to install a multi-way stop should be based on an engineering study and the following criteria should be considered for a multi-way stop sign installation:

A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*

B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*

C. *Minimum volumes:*

W.G. Zimmerman Engineering, Inc.
17011 Beach Boulevard, Suite 1240
Huntington Beach, CA 92647
Phone: 714-799-1700 Fax: 714-333-4712

1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*

2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*

3. *If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*

D. *Where no single criterion is satisfied, but where Criteria B, C.1, and, C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*

Methodology:

The CAMUTCD provides guidance for stop sign applications for traffic volume, sight distance, and accident history. On Wednesday, January 22, 2020, National Data & Surveying Services (NDS) collected peak hour traffic data at each of the intersections (Oak Street, Pine Street, and Maple Street) along with traffic volumes just north of the Meridian Avenue and Oak Street intersection.

Intersection vehicular volumes, major street volumes, and accident data were reviewed for each of the intersections. After further review, none of the intersections satisfy the conditions presented in points A-D of Section 2B.07 Multi-Way STOP Applications of the CA MUTCD.

Conclusions:

Meridian Avenue and Oak Street

The intersection of Meridian Avenue and Oak Street is a t-intersection as shown on the attached aerial photo. Approximately 150 feet north of Oak Street, Meridian Avenue is approximately 40 feet wide and then transitions to 35 feet. Prior to the transition, parking is allowed on both sides of Meridian north of the intersection, south of the intersection parking is allowed on both sides except for the easterly side of the street where there is 97 feet of red curb to prevent parked cars from blocking the line of sight for vehicles making a right turn onto Meridian from Oak. Along the west side of the intersection there is a driveway that serves a single-family residence. Oak Street is 30 feet wide which allows for parking along both sides of the street. Westbound Oak currently has a stop sign, while the north and southbound legs Meridian Avenue do not. The southerly leg of the intersection has a crosswalk with in-pavement lighting along with the appropriate signage.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there was only one (1) accident at the intersection which does not satisfy the requirement of five (5) accidents within a 12-month period. The summary of the accident(s) is presented in the Table 1 below:

Table 1: Meridian Avenue and Oak Street 12-Month Accident History			
Date of Collision	**Type of Collision**	**Collision Severity**	**Motor Vehicle Involved With**
9/22/2019	Broadside	Injury (Complaint of Pain)	Bicycle

Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Oak Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Oak Street is summarized in Table 2 below.

Table 2: Vehicles, Pedestrians, and Bicycles Entering from Oak Street During the Peak Hour(s)						
Intersection	AM Peak 7:30AM – 8:30AM		Noon Peak 11:30AM – 12:30PM		PM Peak 5:00PM – 6:00PM	
Meridian Avenue and Oak Street	Vehicles	114	Vehicles	30	Vehicles	49
	Pedestrian	36	Pedestrian	14	Pedestrian	31
	Bicycles	0	Bicycles	0	Bicycles	0
	AM Total	**150**	**Noon Total**	**44**	**PM Total**	**80**

Based on these numbers, this intersection does not satisfy the minimum of 200 units vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.

Meridian Avenue and Pine Street

The intersection of Meridian Avenue and Pine Street is a t-intersection. At this intersection, Meridian Avenue is 35 feet wide which allows for parking on both sides of Meridian north and south of Pine. Along the westerly side of Meridian there is an apartment complex. Pine Street is 45 feet wide, has a downward slope which meets Meridian Avenue, and parking is allowed on both sides of Pine Street. The westbound leg of Pine Street has a stop sign, while the north and southbound legs of Meridian Avenue does not.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there was only one (1) accident at the Meridian Avenue and Pine Street intersection, which does not satisfy the requirement of five (5) accidents within a 12-month period.

Table 3: Meridian Avenue and Pine Street 12-Month Accident History			
Date of Collision	**Type of Collision**	**Collision Severity**	**Motor Vehicle Involved With**
01/17/2020	Rear End	Injury (Complaint of Pain)	Other Motor Vehicle

Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Pine Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Pine Street is summarized in Table 4 below.

Table 4: Vehicles, Pedestrians, and Bicycles Entering from Pine Street During the Peak Hour(s)

Intersection	AM Peak 7:30AM – 8:30AM		Noon Peak 11:30AM – 12:30PM		PM Peak 5:00PM – 6:00PM	
Meridian Avenue and Pine Street	Vehicles	77	Vehicles	28	Vehicles	51
	Pedestrian	17	Pedestrian	1	Pedestrian	15
	Bicycles	0	Bicycles	0	Bicycles	0
	AM Total	**94**	**Noon Total**	**29**	**PM Total**	**66**

Based on these numbers, this intersection does not satisfy the minimum of 200 units vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.

Meridian Avenue and Maple Street

The Meridian Avenue and Maple Street intersection is a t-intersection located south of the Pine Street intersection. Meridian Avenue is 36 feet wide while Maple Street is 48 feet wide which allows parking on both sides of the street. Maple Street slopes down to meet Meridian Avenue. The area surrounding the intersection consists mainly of single-family residences. On the north leg of the intersection there is a crosswalk. Maple Street is stop controlled while Meridian Avenue is not.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there were no accidents at the Meridian Avenue and Maple Street intersection, which does not satisfy the requirement of five (5) accidents within a 12-month period.

Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Maple Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Maple Street and present in Table 5 below.

Table 5: Vehicles, Pedestrians, and Bicycles Entering from Maple Street During the Peak Hour(s)						
Intersection	AM Peak 7:15AM – 8:15AM		Noon Peak 11:30AM – 12:30PM		PM Peak 5:00PM – 6:00PM	
Meridian Avenue and Maple Street	Vehicles	251	Vehicles	88	Vehicles	257
	Pedestrian	27	Pedestrian	13	Pedestrian	46
	Bicycles	2	Bicycles	2	Bicycles	1
	AM Total	**280**	**Noon Total**	**103**	**PM Total**	**304**

Although, the AM and PM peak reaches the required 200 unit threshold, the noon peak does not which indicates that during the non-peak hours the 200 unit minimum threshold is probably not met. Based on the data, any other 5 hours of the day of this intersection does not reach the minimum of 200 units needed to satisfy the minimum vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.

Recommendations:

Meridian Avenue and Oak Street: It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install horizontal alignment warning signs (W1-4) with a 25 MPH speed advisory sign (W13-1P) along Meridian Avenue to help discourage speeding.

Meridian Avenue and Pine Street: It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install horizontal alignment warning signs (W1-4) with a 25 MPH speed advisory sign (W13-1P) along Meridian Avenue to help discourage speeding along the corridor.

Meridian Avenue and Maple Street: It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install a 25 MPH speed advisory sign (W13-1P) on the existing W1-5 sign on the northeast corner of the intersection to help discourage speeding along the corridor.

The existing crosswalk on the north leg of the intersection currently does not have adequate access for a pedestrian to enter the crosswalk. At the westerly side of the crosswalk, the crosswalk ends at the curb which forces the pedestrian to step up onto the sidewalk. On the easterly end of the crosswalk, the crosswalk ends at the north wing of the existing curb ramp. To enter the crosswalk, the pedestrian must step down into the crosswalk. This does not meet the minimum criteria for ADA access. Pedestrian data was collected during the AM, Noon, and PM peak hours to determine how many pedestrians use the crosswalk. During the peak hours there were 4 pedestrians in the morning, 4 at noon, and 4 during the PM peak. Based on the numbers and existing conditions, it is recommended to remove the crosswalk based on language provided in Section 21950.5 of the California Vehicle Code (CVC).

If you have any questions regarding this memo, please feel free to contact me at 714-799-1700 x 100.

Sincerely,
W.G. Zimmerman Engineering, Inc.

Bill Zimmerman, PE, TE, PTOE
President

WGZE

W.G. Zimmerman Engineering, Inc.
17011 Beach Boulevard, Suite 1240
Huntington Beach, CA 92647
Phone: 714-799-1700 Fax: 714-333-4712

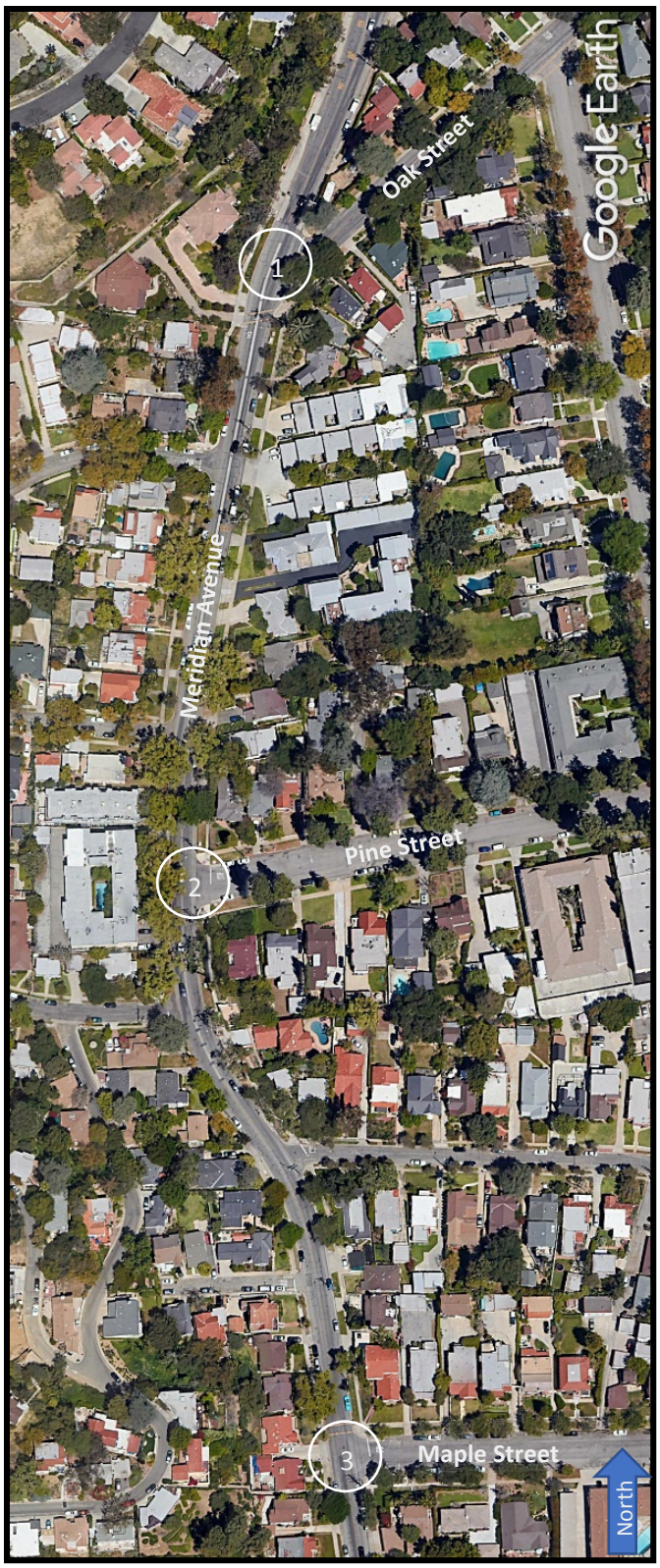

Exhibit A

Aerial Photo

WGZE

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DATA

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Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002n

North Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1
0:15	0	5	0	0	0	0	0	0	0	0	0	0	0	5
0:30	0	3	0	0	1	0	0	0	0	0	0	0	0	4
0:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
1:15	0	2	0	0	0	0	0	0	0	0	0	0	0	2
1:30	0	0	1	0	1	0	0	0	0	0	0	0	0	2
1:45	0	3	1	0	0	0	0	0	0	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	5	0	0	0	0	0	0	0	0	0	0	0	5
4:45	0	6	2	0	0	0	0	0	0	0	0	0	0	8
5:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
5:15	0	11	1	0	0	0	0	0	0	0	0	0	0	12
5:30	0	13	3	0	0	0	0	0	0	0	0	0	0	16
5:45	0	13	3	0	0	0	0	0	0	0	0	0	0	16
6:00	0	26	4	0	0	0	0	0	0	0	0	0	0	30
6:15	0	32	6	0	0	0	0	0	0	0	0	0	0	38
6:30	0	36	9	0	0	0	0	0	0	0	0	0	0	45
6:45	0	55	11	0	1	0	0	0	0	0	0	0	0	67
7:00	0	70	8	0	1	0	0	0	0	0	0	0	0	79
7:15	0	125	15	0	0	0	0	0	0	0	0	0	0	140
7:30	0	129	22	0	1	0	0	0	0	0	0	0	0	152
7:45	0	137	24	1	3	0	0	0	0	0	0	0	0	165
8:00	0	100	13	0	1	0	0	0	0	0	0	0	0	114
8:15	0	78	9	0	0	0	0	0	0	0	0	0	0	87
8:30	1	98	17	0	2	0	0	0	0	0	0	0	0	118
8:45	0	85	17	0	0	0	0	0	0	0	0	0	0	102
9:00	0	83	5	0	1	0	0	0	0	0	0	0	0	89
9:15	0	60	11	0	0	0	0	0	0	0	0	0	0	71
9:30	0	54	14	0	1	0	0	0	0	0	0	0	0	69
9:45	0	55	19	0	2	0	0	0	0	0	0	0	0	76
10:00	0	39	15	0	0	0	0	0	0	0	0	0	0	54
10:15	0	47	7	0	0	0	0	0	0	0	0	0	0	54
10:30	0	38	8	0	0	0	0	0	0	0	0	0	0	46
10:45	1	49	9	0	3	0	0	0	0	0	0	0	0	62
11:00	0	43	8	0	1	0	0	0	0	0	0	0	0	52
11:15	0	41	11	0	1	0	0	0	0	0	0	0	0	53
11:30	0	41	10	0	0	0	0	0	0	0	0	0	0	51
11:45	0	49	11	0	0	0	0	0	0	0	0	0	0	60
12:00 PM	0	49	11	1	1	0	0	0	0	0	0	0	0	62
12:15	0	40	16	0	2	0	0	0	0	0	0	0	0	58
12:30	0	50	9	0	0	0	0	0	0	0	0	0	0	59
12:45	0	46	7	0	3	0	0	0	0	0	0	0	0	56
13:00	1	48	8	0	1	0	0	0	0	0	0	0	0	58
13:15	0	55	6	0	0	0	0	0	0	0	0	0	0	61
13:30	1	56	7	0	1	0	0	0	0	0	0	0	0	65
13:45	0	67	9	0	1	0	0	0	0	0	0	0	0	77
14:00	0	63	16	0	2	0	0	0	0	0	0	0	0	81
14:15	0	64	8	0	0	0	0	0	0	0	0	0	0	72
14:30	1	70	13	0	1	0	0	0	0	0	0	0	0	85
14:45	0	98	18	0	0	0	0	0	0	0	0	0	0	116
15:00	1	90	17	0	1	0	0	0	0	0	0	0	0	109
15:15	0	59	20	0	1	0	0	0	0	0	0	0	0	80
15:30	0	55	14	0	1	0	0	0	0	0	0	0	0	70
15:45	1	65	12	0	1	0	0	0	0	0	0	0	0	79
16:00	0	83	15	0	2	0	0	0	0	0	0	0	0	100
16:15	0	84	13	0	4	0	0	0	0	0	0	0	0	101
16:30	0	76	12	0	0	0	0	0	0	0	0	0	0	88
16:45	0	74	17	0	2	0	0	0	0	0	0	0	0	93
17:00	0	105	19	0	0	0	0	0	0	0	0	0	0	124
17:15	0	95	14	0	1	0	0	0	0	0	0	0	0	110
17:30	1	96	13	0	1	0	0	0	0	0	0	0	0	111
17:45	0	93	14	0	0	0	0	0	0	0	0	0	0	107
18:00	0	81	4	0	1	0	0	0	0	0	0	0	0	86
18:15	0	71	10	0	1	0	0	0	0	0	0	0	0	82
18:30	0	61	11	0	2	0	0	0	0	0	0	0	0	74
18:45	0	60	11	0	0	0	0	0	0	0	0	0	0	71
19:00	0	56	3	0	0	0	0	0	0	0	0	0	0	59
19:15	0	45	3	0	0	0	0	0	0	0	0	0	0	48
19:30	0	44	3	0	1	0	0	0	0	0	0	0	0	48
19:45	0	24	8	0	0	0	0	0	0	0	0	0	0	32
20:00	0	26	2	0	1	0	0	0	0	0	0	0	0	29
20:15	0	29	3	0	0	0	0	0	0	0	0	0	0	32
20:30	0	23	3	0	0	0	0	0	0	0	0	0	0	26
20:45	0	25	1	0	0	0	0	0	0	0	0	0	0	26
21:00	0	31	2	0	0	0	0	0	0	0	0	0	0	33
21:15	0	15	2	0	0	0	0	0	0	0	0	0	0	17
21:30	0	26	1	0	0	0	0	0	0	0	0	0	0	27
21:45	0	12	1	0	0	0	0	0	0	0	0	0	0	13
22:00	0	23	2	0	0	0	0	0	0	0	0	0	0	25
22:15	0	9	1	0	0	0	0	0	0	0	0	0	0	10
22:30	0	6	1	0	0	0	0	0	0	0	0	0	0	7
22:45	0	8	2	0	0	0	0	0	0	0	0	0	0	10
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
23:15	0	3	1	0	0	0	0	0	0	0	0	0	0	4
23:30	0	4	1	0	0	0	0	0	0	0	0	0	0	5
23:45	0	2	1	0	0	0	0	0	0	0	0	0	0	3
Totals	**8**	**4021**	**684**	**2**	**52**									**4767**
% of Totals	0%	84%	14%	0%	1%									100%

AM Volumes	2	1646	298	1	20	0	0	0	0	0	0	0	0	1967
% AM	0%	35%	6%	0%	0%									41%
AM Peak Hour														
Volume														
PM Volumes	6	2375	386	1	32	0	0	0	0	0	0	0	0	2800
% PM	0%	50%	8%	0%	1%									59%
PM Peak Hour														
Volume														

Directional Peak Periods	**AM 7-9**			**NOON 12-2**			**PM 4-6**			**Off Peak Volumes**		
All Classes	Volume		%	Volume		%	Volume		%	Volume		%
	957	← →	20%	496	← →	10%	834	← →	17%	2480	← →	52%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002s

South Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	4
0:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4
0:30	0	3	1	0	0	0	0	0	0	0	0	0	0	4
0:45	0	5	1	0	0	0	0	0	0	0	0	0	0	6
1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
1:15	0	2	1	0	0	0	0	0	0	0	0	0	0	3
1:30	0	2	1	0	0	0	0	0	0	0	0	0	0	3
1:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
2:15	0	3	1	0	0	0	0	0	0	0	0	0	0	4
2:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
4:45	0	2	1	0	0	0	0	0	0	0	0	0	0	3
5:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
5:15	0	5	1	0	0	0	0	0	0	0	0	0	0	6
5:30	0	4	0	0	0	0	0	0	0	0	0	0	0	4
5:45	0	5	3	0	3	0	0	0	0	0	0	0	0	11
6:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
6:15	0	12	1	0	0	0	0	0	0	0	0	0	0	13
6:30	0	36	4	0	0	0	0	0	0	0	0	0	0	40
6:45	0	46	8	0	0	0	0	0	0	0	0	0	0	54
7:00	2	60	7	0	2	0	0	0	0	0	0	0	0	71
7:15	0	62	6	1	0	1	0	0	0	0	0	0	0	70
7:30	0	87	23	0	0	0	0	0	0	0	0	0	0	110
7:45	0	128	34	0	3	0	0	0	0	0	0	0	0	165
8:00	1	92	27	1	1	0	0	0	0	0	0	0	0	122
8:15	0	98	22	0	2	0	0	0	0	0	0	0	0	122
8:30	0	70	11	0	1	0	0	0	0	0	0	0	0	82
8:45	0	59	15	0	1	0	0	0	0	0	0	0	0	75
9:00	0	44	10	0	1	0	0	0	0	0	0	0	0	55
9:15	0	57	9	0	0	1	0	0	0	0	0	0	0	67
9:30	0	39	7	0	0	0	0	0	0	0	0	0	0	46
9:45	0	50	16	1	1	0	0	0	0	0	0	0	0	68
10:00	1	31	7	0	3	0	0	0	0	0	0	0	0	42
10:15	0	31	8	1	2	0	0	0	0	0	0	0	0	42
10:30	0	34	9	0	1	0	0	0	0	0	0	0	0	44
10:45	0	36	8	0	3	1	0	0	0	0	0	0	0	48
11:00	0	33	10	0	0	0	0	0	0	0	0	0	0	43
11:15	1	37	6	0	0	0	0	0	0	0	0	0	0	44
11:30	1	47	15	0	0	1	0	0	0	0	0	0	0	64
11:45	0	40	3	0	0	0	0	0	0	0	0	0	0	43
12:00 PM	0	38	5	0	0	0	0	0	0	0	0	0	0	43
12:15	0	46	11	1	1	0	0	0	0	0	0	0	0	59
12:30	0	39	12	0	0	0	0	0	0	0	0	0	0	51
12:45	0	47	11	0	0	0	0	0	0	0	0	0	0	58
13:00	0	48	8	0	0	0	0	0	0	0	0	0	0	56
13:15	0	40	5	0	2	0	0	0	0	0	0	0	0	47
13:30	0	46	12	0	0	0	0	0	0	0	0	0	0	58
13:45	1	44	9	0	2	0	0	0	0	0	0	0	0	56
14:00	0	48	11	0	0	1	0	0	0	0	0	0	0	60
14:15	1	50	11	0	4	0	0	0	0	0	0	0	0	66
14:30	0	56	18	0	0	0	0	0	0	0	0	0	0	74
14:45	1	69	21	0	1	0	0	0	0	0	0	0	0	92
15:00	0	85	15	0	1	0	0	0	0	0	0	0	0	101
15:15	0	90	21	0	1	0	0	0	0	0	0	0	0	112
15:30	1	89	18	0	1	0	0	0	0	0	0	0	0	109
15:45	0	78	15	0	1	1	0	0	0	0	0	0	0	95
16:00	0	91	24	0	0	0	0	0	0	0	0	0	0	115
16:15	1	81	18	0	1	1	0	0	0	0	0	0	0	102
16:30	0	80	17	0	0	0	0	0	0	0	0	0	0	97
16:45	2	84	23	0	2	0	0	0	0	0	0	0	0	111
17:00	1	135	15	0	1	0	0	0	0	0	0	0	0	152
17:15	1	131	17	0	3	0	0	0	0	0	0	0	0	152
17:30	1	126	26	0	2	0	0	0	0	0	0	0	0	155
17:45	0	112	24	0	1	0	0	0	0	0	0	0	0	137
18:00	0	118	16	0	0	0	0	0	0	0	0	0	0	134
18:15	0	84	12	0	0	0	0	0	0	0	0	0	0	96
18:30	0	68	12	0	0	0	0	0	0	0	0	0	0	80
18:45	0	81	14	0	1	0	0	0	0	0	0	0	0	96
19:00	0	63	7	0	0	0	0	0	0	0	0	0	0	70
19:15	0	64	8	0	0	0	0	0	0	0	0	0	0	72
19:30	0	43	1	0	0	0	0	0	0	0	0	0	0	44
19:45	0	48	4	0	1	0	0	0	0	0	0	0	0	53
20:00	0	47	4	0	0	0	0	0	0	0	0	0	0	51
20:15	0	49	6	0	0	0	0	0	0	0	0	0	0	55
20:30	0	51	1	0	0	0	0	0	0	0	0	0	0	52
20:45	0	31	2	0	0	0	0	0	0	0	0	0	0	33
21:00	0	38	2	0	0	0	0	0	0	0	0	0	0	40
21:15	0	31	3	0	0	0	0	0	0	0	0	0	0	34
21:30	0	32	1	0	0	0	0	0	0	0	0	0	0	33
21:45	0	20	2	0	0	0	0	0	0	0	0	0	0	22
22:00	0	19	4	0	0	0	0	0	0	0	0	0	0	23
22:15	0	19	3	0	0	0	0	0	0	0	0	0	0	22
22:30	0	12	2	0	0	0	0	0	0	0	0	0	0	14
22:45	0	15	2	0	0	0	0	0	0	0	0	0	0	17
23:00	0	13	0	0	0	0	0	0	0	0	0	0	0	13
23:15	0	11	0	0	0	0	0	0	0	0	0	0	0	11
23:30	0	9	1	0	0	1	0	0	0	0	0	0	0	11
23:45	0	5	2	0	0	0	0	0	0	0	0	0	0	7
Totals	**16**	**4019**	**754**	**5**	**51**	**8**								**4853**
% of Totals	0%	83%	16%	0%	1%	0%								100%

AM Volumes	6	1295	278	4	25	4	0	0	0	0	0	0	0	1612
% AM	0%	27%	6%	0%	1%	0%								33%
AM Peak Hour	6:15	7:30	7:30	7:15	10:00	10:45								7:30
Volume	2	405	106	2	9	2								519
PM Volumes	10	2724	476	1	26	4	0	0	0	0	0	0	0	3241
% PM	0%	56%	10%	0%	1%	0%								67%
PM Peak Hour	16:45	17:00	17:15	12:00	16:45	15:30								17:00
Volume	5	504	83	1	8	2								596

Directional Peak Periods	**AM 7-9**			**NOON 12-2**			**PM 4-6**			**Off Peak Volumes**		
All Classes	Volume		%	Volume		%	Volume		%	Volume		%
	817	⟷	17%	428	⟷	9%	1021	⟷	21%	2587	⟷	53%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	5
0:15	0	9	0	0	0	0	0	0	0	0	0	0	0	9
0:30	0	6	1	0	1	0	0	0	0	0	0	0	0	8
0:45	0	6	1	0	0	0	0	0	0	0	0	0	0	7
1:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
1:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5
1:30	0	2	2	0	1	0	0	0	0	0	0	0	0	5
1:45	0	4	1	0	0	0	0	0	0	0	0	0	0	5
2:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
2:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5
2:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2
4:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	7	0	0	0	0	0	0	0	0	0	0	0	7
4:45	0	8	3	0	0	0	0	0	0	0	0	0	0	11
5:00	0	10	2	0	0	0	0	0	0	0	0	0	0	12
5:15	0	16	2	0	0	0	0	0	0	0	0	0	0	18
5:30	0	17	3	0	0	0	0	0	0	0	0	0	0	20
5:45	0	18	6	0	3	0	0	0	0	0	0	0	0	27
6:00	0	30	6	0	0	0	0	0	0	0	0	0	0	36
6:15	0	44	7	0	0	0	0	0	0	0	0	0	0	51
6:30	0	72	13	0	0	0	0	0	0	0	0	0	0	85
6:45	0	101	19	0	1	0	0	0	0	0	0	0	0	121
7:00	2	130	15	0	3	0	0	0	0	0	0	0	0	150
7:15	0	187	21	1	0	1	0	0	0	0	0	0	0	210
7:30	0	216	45	0	1	0	0	0	0	0	0	0	0	262
7:45	0	265	58	1	6	0	0	0	0	0	0	0	0	330
8:00	1	192	40	1	2	0	0	0	0	0	0	0	0	236
8:15	0	176	31	0	2	0	0	0	0	0	0	0	0	209
8:30	1	168	28	0	3	0	0	0	0	0	0	0	0	200
8:45	0	144	32	0	1	0	0	0	0	0	0	0	0	177
9:00	0	127	15	0	2	0	0	0	0	0	0	0	0	144
9:15	0	117	20	0	0	1	0	0	0	0	0	0	0	138
9:30	0	93	21	0	1	0	0	0	0	0	0	0	0	115
9:45	0	105	35	1	3	0	0	0	0	0	0	0	0	144
10:00	1	70	22	0	3	0	0	0	0	0	0	0	0	96
10:15	0	78	15	1	2	0	0	0	0	0	0	0	0	96
10:30	0	72	17	0	1	0	0	0	0	0	0	0	0	90
10:45	1	85	17	0	6	1	0	0	0	0	0	0	0	110
11:00	0	76	18	0	1	0	0	0	0	0	0	0	0	95
11:15	1	78	17	0	1	0	0	0	0	0	0	0	0	97
11:30	1	88	25	0	0	1	0	0	0	0	0	0	0	115
11:45	0	89	14	0	0	0	0	0	0	0	0	0	0	103
12:00 PM	0	87	16	1	1	0	0	0	0	0	0	0	0	105
12:15	0	86	27	1	3	0	0	0	0	0	0	0	0	117
12:30	0	89	21	0	0	0	0	0	0	0	0	0	0	110
12:45	0	93	18	0	3	0	0	0	0	0	0	0	0	114
13:00	1	96	16	0	1	0	0	0	0	0	0	0	0	114
13:15	0	95	11	0	2	0	0	0	0	0	0	0	0	108
13:30	1	102	19	0	1	0	0	0	0	0	0	0	0	123
13:45	1	111	18	0	3	0	0	0	0	0	0	0	0	133
14:00	0	111	27	0	2	1	0	0	0	0	0	0	0	141
14:15	1	114	19	0	4	0	0	0	0	0	0	0	0	138
14:30	1	126	31	0	1	0	0	0	0	0	0	0	0	159
14:45	1	167	39	0	1	0	0	0	0	0	0	0	0	208
15:00	1	175	32	0	2	0	0	0	0	0	0	0	0	210
15:15	0	149	41	0	2	0	0	0	0	0	0	0	0	192
15:30	1	144	32	0	2	0	0	0	0	0	0	0	0	179
15:45	1	143	27	0	2	1	0	0	0	0	0	0	0	174
16:00	0	174	39	0	2	0	0	0	0	0	0	0	0	215
16:15	1	165	31	0	5	1	0	0	0	0	0	0	0	203
16:30	0	156	29	0	0	0	0	0	0	0	0	0	0	185
16:45	2	158	40	0	4	0	0	0	0	0	0	0	0	204
17:00	1	240	34	0	1	0	0	0	0	0	0	0	0	276
17:15	1	226	31	0	4	0	0	0	0	0	0	0	0	262
17:30	2	222	39	0	3	0	0	0	0	0	0	0	0	266
17:45	0	205	38	0	1	0	0	0	0	0	0	0	0	244
18:00	0	199	20	0	1	0	0	0	0	0	0	0	0	220
18:15	0	155	22	0	1	0	0	0	0	0	0	0	0	178
18:30	0	129	23	0	2	0	0	0	0	0	0	0	0	154
18:45	0	141	25	0	1	0	0	0	0	0	0	0	0	167
19:00	0	119	10	0	0	0	0	0	0	0	0	0	0	129
19:15	0	109	11	0	0	0	0	0	0	0	0	0	0	120
19:30	0	87	4	0	1	0	0	0	0	0	0	0	0	92
19:45	0	72	12	0	1	0	0	0	0	0	0	0	0	85
20:00	0	73	6	0	1	0	0	0	0	0	0	0	0	80
20:15	0	78	9	0	0	0	0	0	0	0	0	0	0	87
20:30	0	74	4	0	0	0	0	0	0	0	0	0	0	78
20:45	0	56	3	0	0	0	0	0	0	0	0	0	0	59
21:00	0	69	4	0	0	0	0	0	0	0	0	0	0	73
21:15	0	46	5	0	0	0	0	0	0	0	0	0	0	51
21:30	0	58	2	0	0	0	0	0	0	0	0	0	0	60
21:45	0	32	3	0	0	0	0	0	0	0	0	0	0	35
22:00	0	42	6	0	0	0	0	0	0	0	0	0	0	48
22:15	0	28	4	0	0	0	0	0	0	0	0	0	0	32
22:30	0	18	3	0	0	0	0	0	0	0	0	0	0	21
22:45	0	23	4	0	0	0	0	0	0	0	0	0	0	27
23:00	0	23	1	0	0	0	0	0	0	0	0	0	0	24
23:15	0	14	1	0	0	0	0	0	0	0	0	0	0	15
23:30	0	13	2	0	0	1	0	0	0	0	0	0	0	16
23:45	0	7	3	0	0	0	0	0	0	0	0	0	0	10
Totals	**24**	**8040**	**1438**	**7**	**103**	**8**								**9620**
% of Totals	0%	84%	15%	0%	1%	0%								100%

AM Volumes	8	2941	576	5	45	4	0	0	0	0	0	0	0	3579
% AM	0%	31%	6%	0%	0%	0%								37%
AM Peak Hour	10:45	7:15	7:30	7:15	7:45	10:45								7:15
Volume	3	860	174	3	13	2								1038
PM Volumes	16	5099	862	2	58	4	0	0	0	0	0	0	0	6041
% PM	0%	53%	9%	0%	1%	0%								63%
PM Peak Hour	16:45	17:00	14:45	12:00	16:45	15:30								17:00
Volume	6	893	144	2	12	2								1048

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume		%	Volume		%	Volume		%	Volume		%
	1774	⟷	18%	924	⟷	10%	1855	⟷	19%	5067	⟷	53%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002n

North Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	10	0	0	1	0	0	0	0	0	0	0	0	11
1:00	0	7	2	0	1	0	0	0	0	0	0	0	0	10
2:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
4:00	0	12	3	0	0	0	0	0	0	0	0	0	0	15
5:00	0	43	9	0	0	0	0	0	0	0	0	0	0	52
6:00	0	149	30	0	1	0	0	0	0	0	0	0	0	180
7:00	0	461	69	1	5	0	0	0	0	0	0	0	0	536
8:00	1	361	56	0	3	0	0	0	0	0	0	0	0	421
9:00	0	252	49	0	4	0	0	0	0	0	0	0	0	305
10:00	1	173	39	0	3	0	0	0	0	0	0	0	0	216
11:00	0	174	40	0	2	0	0	0	0	0	0	0	0	216
12:00 PM	0	185	43	1	6	0	0	0	0	0	0	0	0	235
13:00	2	226	30	0	3	0	0	0	0	0	0	0	0	261
14:00	1	295	55	0	3	0	0	0	0	0	0	0	0	354
15:00	2	269	63	0	4	0	0	0	0	0	0	0	0	338
16:00	0	317	57	0	8	0	0	0	0	0	0	0	0	382
17:00	1	389	60	0	2	0	0	0	0	0	0	0	0	452
18:00	0	273	36	0	4	0	0	0	0	0	0	0	0	313
19:00	0	169	17	0	1	0	0	0	0	0	0	0	0	187
20:00	0	103	9	0	1	0	0	0	0	0	0	0	0	113
21:00	0	84	6	0	0	0	0	0	0	0	0	0	0	90
22:00	0	46	6	0	0	0	0	0	0	0	0	0	0	52
23:00	0	19	4	0	0	0	0	0	0	0	0	0	0	23
Totals	8	4021	684	2	52									4767
% of Totals	0%	84%	14%	0%	1%									100%

AM Volumes	2	1646	298	1	20	0	0	0	0	0	0	0	0	1967
% AM	0%	35%	6%	0%	0%									41%
AM Peak Hour	8:00	7:00	7:00	7:00	7:00									7:00
Volume	1	461	69	1	5									536
PM Volumes	6	2375	386	1	32	0	0	0	0	0	0	0	0	2800
% PM	0%	50%	8%	0%	1%									59%
PM Peak Hour	13:00	17:00	15:00	12:00	16:00									17:00
Volume	2	389	63	1	8									452

Directional Peak Periods All Classes	AM 7-9 Volume	AM 7-9 %	NOON 12-2 Volume	NOON 12-2 %	PM 4-6 Volume	PM 4-6 %	Off Peak Volumes Volume	Off Peak Volumes %
	957	20%	496	10%	834	17%	2480	52%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002s

South Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0	18
1:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9
2:00	0	9	1	0	1	0	0	0	0	0	0	0	0	11
3:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
4:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9
5:00	0	18	4	0	3	0	0	0	0	0	0	0	0	25
6:00	0	98	15	0	0	0	0	0	0	0	0	0	0	113
7:00	2	337	70	1	5	1	0	0	0	0	0	0	0	416
8:00	1	319	75	1	5	0	0	0	0	0	0	0	0	401
9:00	0	190	42	1	2	1	0	0	0	0	0	0	0	236
10:00	1	132	32	1	9	1	0	0	0	0	0	0	0	176
11:00	2	157	34	0	0	1	0	0	0	0	0	0	0	194
12:00 PM	0	170	39	1	1	0	0	0	0	0	0	0	0	211
13:00	1	178	34	0	4	0	0	0	0	0	0	0	0	217
14:00	2	223	61	0	5	1	0	0	0	0	0	0	0	292
15:00	1	342	69	0	4	1	0	0	0	0	0	0	0	417
16:00	3	336	82	0	3	1	0	0	0	0	0	0	0	425
17:00	3	504	82	0	7	0	0	0	0	0	0	0	0	596
18:00	0	351	54	0	1	0	0	0	0	0	0	0	0	406
19:00	0	218	20	0	1	0	0	0	0	0	0	0	0	239
20:00	0	178	13	0	0	0	0	0	0	0	0	0	0	191
21:00	0	121	8	0	0	0	0	0	0	0	0	0	0	129
22:00	0	65	11	0	0	0	0	0	0	0	0	0	0	76
23:00	0	38	3	0	0	1	0	0	0	0	0	0	0	42
Totals	16	4019	754	5	51	8								4853
% of Totals	0%	83%	16%	0%	1%	0%								100%

AM Volumes	6	1295	278	4	25	4	0	0	0	0	0	0	0	1612
% AM	0%	27%	6%	0%	1%	0%								33%
AM Peak Hour	7:00	7:00	8:00	7:00	10:00	7:00								7:00
Volume	2	337	75	1	9	1								416
PM Volumes	10	2724	476	1	26	4	0	0	0	0	0	0	0	3241
% PM	0%	56%	10%	0%	1%	0%								67%
PM Peak Hour	16:00	17:00	16:00	12:00	17:00	14:00								17:00
Volume	3	504	82	1	7	1								596

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%	Volume	⟷	%
	817		17%	428		9%	1021		21%	2587		53%

Classification Definitions

1 Motorcycles	**4** Buses	**7** > =4-Axle Single Units	**10** >=6-Axle Single Trailers	**13** >=7-Axle Multi-Trailers
2 Passenger Cars	**5** 2-Axle, 6-Tire Single Units	**8** <=4-Axle Single Trailers	**11** <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	**6** 3-Axle Single Units	**9** 5-Axle Single Trailers	**12** 6-Axle Multi-Trailers	

Prepared by National Data & Surveying Services

CLASSIFICATION

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002

Summary

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	26	2	0	1	0	0	0	0	0	0	0	0	29
1:00	0	14	4	0	1	0	0	0	0	0	0	0	0	19
2:00	0	11	1	0	1	0	0	0	0	0	0	0	0	13
3:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
4:00	0	20	4	0	0	0	0	0	0	0	0	0	0	24
5:00	0	61	13	0	3	0	0	0	0	0	0	0	0	77
6:00	0	247	45	0	1	0	0	0	0	0	0	0	0	293
7:00	2	798	139	2	10	1	0	0	0	0	0	0	0	952
8:00	2	680	131	1	8	0	0	0	0	0	0	0	0	822
9:00	0	442	91	1	6	1	0	0	0	0	0	0	0	541
10:00	2	305	71	1	12	1	0	0	0	0	0	0	0	392
11:00	2	331	74	0	2	1	0	0	0	0	0	0	0	410
12:00 PM	0	355	82	2	7	0	0	0	0	0	0	0	0	446
13:00	3	404	64	0	7	0	0	0	0	0	0	0	0	478
14:00	3	518	116	0	8	1	0	0	0	0	0	0	0	646
15:00	3	611	132	0	8	1	0	0	0	0	0	0	0	755
16:00	3	653	139	0	11	1	0	0	0	0	0	0	0	807
17:00	4	893	142	0	9	0	0	0	0	0	0	0	0	1048
18:00	0	624	90	0	5	0	0	0	0	0	0	0	0	719
19:00	0	387	37	0	2	0	0	0	0	0	0	0	0	426
20:00	0	281	22	0	1	0	0	0	0	0	0	0	0	304
21:00	0	205	14	0	0	0	0	0	0	0	0	0	0	219
22:00	0	111	17	0	0	0	0	0	0	0	0	0	0	128
23:00	0	57	7	0	0	1	0	0	0	0	0	0	0	65
Totals	24	8040	1438	7	103	8								9620
% of Totals	0%	84%	15%	0%	1%	0%								100%

AM Volumes	8	2941	576	5	45	4	0	0	0	0	0	0	0	3579
% AM	0%	31%	6%	0%	0%	0%								37%
AM Peak Hour	7:00	7:00	7:00	7:00	10:00	7:00								7:00
Volume	2	798	139	2	12	1								952
PM Volumes	16	5099	862	2	58	4	0	0	0	0	0	0	0	6041
% PM	0%	53%	9%	0%	1%	0%								63%
PM Peak Hour	17:00	17:00	17:00	12:00	16:00	14:00								17:00
Volume	4	893	142	2	11	1								1048

Directional Peak Periods	AM 7-9			NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes	Volume	↔	%	Volume	↔	%	Volume	↔	%	Volume	↔	%
	1774		18%	924		10%	1855		19%	5067		53%

Classification Definitions

1 Motorcycles
2 Passenger Cars
3 2-Axle, 4-Tire Single Units
4 Buses
5 2-Axle, 6-Tire Single Units
6 3-Axle Single Units
7 > =4-Axle Single Units
8 <=4-Axle Single Trailers
9 5-Axle Single Trailers
10 >=6-Axle Single Trailers
11 <=5-Axle Multi-Trailers
12 6-Axle Multi-Trailers
13 >=7-Axle Multi-Trailers

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Meridian Ave N/O Oak St

Day: Wednesday
Date: 1/22/2020

City: South Pasadena
Project #: CA20_5029_002

DAILY TOTALS	NB	SB	EB	WB	Total
	4,767	4,853	0	0	9,620

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
0:00	1		4		0	0	5		12:00	62		43		0	0	105	
0:15	5		4		0	0	9		12:15	58		59		0	0	117	
0:30	4		4		0	0	8		12:30	59		51		0	0	110	
0:45	1	11	6	18	0	0	7	29	12:45	56	235	58	211	0	0	114	446
1:00	2		2		0	0	4		13:00	58		56		0	0	114	
1:15	2		3		0	0	5		13:15	61		47		0	0	108	
1:30	2		3		0	0	5		13:30	65		58		0	0	123	
1:45	4	10	1	9	0	0	5	19	13:45	77	261	56	217	0	0	133	478
2:00	0		4		0	0	4		14:00	81		60		0	0	141	
2:15	1		4		0	0	5		14:15	72		66		0	0	138	
2:30	1		1		0	0	2		14:30	85		74		0	0	159	
2:45	0	2	2	11	0	0	2	13	14:45	116	354	92	292	0	0	208	646
3:00	1		0		0	0	1		15:00	109		101		0	0	210	
3:15	1		1		0	0	2		15:15	80		112		0	0	192	
3:30	0		2		0	0	2		15:30	70		109		0	0	179	
3:45	1	3	1	4	0	0	2	7	15:45	79	338	95	417	0	0	174	755
4:00	2		4		0	0	6		16:00	100		115		0	0	215	
4:15	0		0		0	0			16:15	101		102		0	0	203	
4:30	5		2		0	0	7		16:30	88		97		0	0	185	
4:45	8	15	3	9	0	0	11	24	16:45	93	382	111	425	0	0	204	807
5:00	8		4		0	0	12		17:00	124		152		0	0	276	
5:15	12		6		0	0	18		17:15	110		152		0	0	262	
5:30	16		4		0	0	20		17:30	111		155		0	0	266	
5:45	16	52	11	25	0	0	27	77	17:45	107	452	137	596	0	0	244	1048
6:00	30		6		0	0	36		18:00	86		134		0	0	220	
6:15	38		13		0	0	51		18:15	82		96		0	0	178	
6:30	45		40		0	0	85		18:30	74		80		0	0	154	
6:45	67	180	54	113	0	0	121	293	18:45	71	313	96	406	0	0	167	719
7:00	79		71		0	0	150		19:00	59		70		0	0	129	
7:15	140		70		0	0	210		19:15	48		72		0	0	120	
7:30	152		110		0	0	262		19:30	48		44		0	0	92	
7:45	165	536	165	416	0	0	330	952	19:45	32	187	53	239	0	0	85	426
8:00	114		122		0	0	236		20:00	29		51		0	0	80	
8:15	87		122		0	0	209		20:15	32		55		0	0	87	
8:30	118		82		0	0	200		20:30	26		52		0	0	78	
8:45	102	421	75	401	0	0	177	822	20:45	26	113	33	191	0	0	59	304
9:00	89		55		0	0	144		21:00	33		40		0	0	73	
9:15	71		67		0	0	138		21:15	17		34		0	0	51	
9:30	69		46		0	0	115		21:30	27		33		0	0	60	
9:45	76	305	68	236	0	0	144	541	21:45	13	90	22	129	0	0	35	219
10:00	54		42		0	0	96		22:00	25		23		0	0	48	
10:15	54		42		0	0	96		22:15	10		22		0	0	32	
10:30	46		44		0	0	90		22:30	7		14		0	0	21	
10:45	62	216	48	176	0	0	110	392	22:45	10	52	17	76	0	0	27	128
11:00	52		43		0	0	95		23:00	11		13		0	0	24	
11:15	53		44		0	0	97		23:15	4		11		0	0	15	
11:30	51		64		0	0	115		23:30	5		11		0	0	16	
11:45	60	216	43	194	0	0	103	410	23:45	3	23	7	42	0	0	10	65
TOTALS		1967		1612				3579	TOTALS		2800		3241				6041
SPLIT %		55.0%		45.0%				37.2%	SPLIT %		46.3%		53.7%				62.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	4,767	4,853	0	0	9,620

AM Peak Hour	7:15	7:30					7:15		PM Peak Hour	17:00	17:00					17:00		
AM Pk Volume	571	519					1038		PM Pk Volume	452	596					1048		
Pk Hr Factor	0.865	0.786					0.786		Pk Hr Factor	0.911	0.961					0.949		
7 - 9 Volume	957	817	0	0			1774		4 - 6 Volume	834	1021	0	0			1855		
7 - 9 Peak Hour	7:15	7:30					7:15		4 - 6 Peak Hour	17:00	17:00					17:00		
7 - 9 Pk Volume	571	519	0	0			1038		4 - 6 Pk Volume	452	596	0	0			1048		
Pk Hr Factor	0.865	0.786	0.000	0.000			0.786		Pk Hr Factor	0.911	0.961	0.000	0.000			0.949		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Oak St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-001
Date: 1/22/2020

Total

NS/EW Streets:	Meridian Ave				Meridian Ave				Oak St				Oak St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	79	5	0	3	69	0	0	0	0	0	0	4	0	7	0	167
7:15 AM	0	121	6	0	2	57	0	0	0	0	0	0	2	0	10	0	198
7:30 AM	0	137	28	0	19	84	0	0	0	0	0	0	2	0	17	0	287
7:45 AM	0	131	71	0	61	112	0	0	1	0	0	0	6	0	32	0	414
8:00 AM	0	87	22	0	13	113	0	0	0	0	0	0	12	0	35	0	282
8:15 AM	0	78	6	0	9	115	0	0	0	0	0	0	2	0	8	0	218
8:30 AM	0	109	9	0	5	87	0	0	0	0	0	0	2	0	5	0	217
8:45 AM	0	98	4	0	3	73	0	0	0	0	0	0	0	0	9	0	187
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	840	151	0	115	710	0	0	1	0	0	0	30	0	123	0	1970
APPROACH %'s :	0.00%	84.76%	15.24%	0.00%	13.94%	86.06%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	19.61%	0.00%	80.39%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	433	127	0	102	424	0	0	1	0	0	0	22	0	92	0	1201
PEAK HR FACTOR :	0.000	0.790	0.447	0.000	0.418	0.922	0.000	0.000	0.250	0.000	0.000	0.000	0.458	0.000	0.657	0.000	0.725
		0.693				0.760				0.250				0.606			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	50	4	0	2	45	0	0	0	0	0	0	2	0	3	0	106
11:15 AM	0	49	5	0	1	42	0	0	0	0	0	0	3	0	6	0	106
11:30 AM	0	41	2	0	7	45	0	0	0	0	0	0	2	0	5	0	102
11:45 AM	0	61	6	0	3	50	0	0	0	0	0	0	1	0	0	0	121
12:00 PM	0	50	5	0	2	33	0	0	0	0	0	0	3	0	9	0	102
12:15 PM	0	51	1	0	5	55	0	0	0	0	0	0	2	0	4	0	118
12:30 PM	0	56	3	0	3	52	0	0	0	0	0	0	1	0	3	0	118
12:45 PM	0	55	4	0	3	54	0	0	0	0	0	0	5	0	3	0	124
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	413	30	0	26	376	0	0	0	0	0	0	19	0	33	0	897
APPROACH %'s :	0.00%	93.23%	6.77%	0.00%	6.47%	93.53%	0.00%	0.00%					36.54%	0.00%	63.46%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	212	13	0	13	194	0	0	0	0	0	0	11	0	19	0	462
PEAK HR FACTOR :	0.000	0.946	0.650	0.000	0.650	0.882	0.000	0.000	0.000	0.000	0.000	0.000	0.550	0.000	0.528	0.000	0.931
		0.953				0.863								0.625			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	67	5	0	8	51	0	0	0	0	0	0	3	0	21	0	155
2:15 PM	0	54	7	0	2	65	0	0	0	0	0	0	6	0	20	0	154
2:30 PM	0	77	3	0	11	63	0	0	0	0	0	0	3	0	4	1	162
2:45 PM	0	94	15	0	19	69	0	0	0	0	0	0	9	0	19	0	225
3:00 PM	0	81	9	0	16	80	0	0	0	0	0	0	5	0	25	0	216
3:15 PM	0	76	3	0	8	107	0	0	0	0	0	0	6	0	16	0	216
3:30 PM	0	64	5	0	6	97	0	0	0	0	0	0	4	0	6	0	182
3:45 PM	0	72	1	0	8	84	0	0	0	0	0	0	3	0	6	0	174
4:00 PM	0	85	3	0	9	94	0	0	0	0	0	0	4	0	10	0	205
4:15 PM	0	100	4	0	5	110	0	0	0	0	0	0	6	0	10	0	235
4:30 PM	0	81	7	0	2	88	0	0	0	0	0	0	6	0	6	0	190
4:45 PM	0	90	2	0	6	106	0	0	0	0	0	0	4	0	4	0	212
5:00 PM	0	111	6	0	8	134	0	0	0	0	0	0	6	0	11	1	277
5:15 PM	0	111	4	0	17	147	0	0	0	0	0	0	7	0	5	0	291
5:30 PM	0	106	4	0	12	139	0	0	0	0	0	0	3	0	4	0	268
5:45 PM	0	95	7	0	9	134	0	0	0	0	0	0	6	0	7	0	258
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1364	85	0	146	1568	0	0	0	0	0	0	81	0	174	2	3420
APPROACH %'s :	0.00%	94.13%	5.87%	0.00%	8.52%	91.48%	0.00%	0.00%					31.52%	0.00%	67.70%	0.78%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	423	21	0	46	554	0	0	0	0	0	0	22	0	27	1	1094
PEAK HR FACTOR :	0.000	0.953	0.750	0.000	0.676	0.942	0.000	0.000	0.000	0.000	0.000	0.000	0.786	0.000	0.614	0.250	0.940
		0.949				0.915								0.694			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Oak St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-001
Date: 1/22/2020

Bikes

NS/EW Streets:	Meridian Ave				Meridian Ave				Oak St				Oak St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	7
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%									0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.000	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.625																

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.00	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500																

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
3:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	3	0	0	0	0	0	0	3	0	0	0	8
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Oak St
City: South Pasadena

Project ID: 20-05030-001
Date: 1/22/2020

Pedestrians (Crosswalks)

NS/EW Streets:	Meridian Ave		Meridian Ave		Oak St		Oak St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	1	1	0	0	0	3	5
7:15 AM	0	0	1	0	0	0	2	0	3
7:30 AM	0	0	12	0	1	1	1	3	18
7:45 AM	0	0	8	0	1	0	2	0	11
8:00 AM	0	0	2	0	1	0	0	2	5
8:15 AM	0	0	0	0	1	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	0	1	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	24	2	4	3	5	8	46
APPROACH %'s :			92.31%	7.69%	57.14%	42.86%	38.46%	61.54%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	0	22	0	4	2	3	5	36
PEAK HR FACTOR :			0.458		1.000	0.500	0.375	0.417	0.500
			0.458		0.750		0.500		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	0	0	0	0	1	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	1	1	0	2
11:45 AM	0	0	1	0	0	0	1	2	4
12:00 PM	0	0	0	2	2	0	0	1	5
12:15 PM	0	0	0	2	0	1	0	0	3
12:30 PM	0	0	0	0	1	2	0	0	3
12:45 PM	0	0	0	1	0	0	1	1	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	5	3	5	3	4	21
APPROACH %'s :			16.67%	83.33%	37.50%	62.50%	42.86%	57.14%	
PEAK HR :	**12:00 PM - 01:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	5	3	3	1	2	14
PEAK HR FACTOR :				0.625	0.375	0.375	0.250	0.500	0.700
			0.625		0.500		0.375		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	3	0	1	1	0	5
2:15 PM	0	0	0	2	0	1	1	1	5
2:30 PM	0	0	0	1	1	0	2	0	4
2:45 PM	0	0	1	1	2	1	1	0	6
3:00 PM	0	0	0	5	1	3	1	1	11
3:15 PM	0	0	2	6	3	2	1	1	15
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	2	1	3	0	0	1	7
4:00 PM	0	0	3	3	1	0	0	0	7
4:15 PM	0	0	2	0	0	0	0	0	2
4:30 PM	0	0	0	2	1	1	1	3	8
4:45 PM	0	0	1	3	0	2	2	2	10
5:00 PM	0	0	3	2	1	2	1	1	10
5:15 PM	0	0	4	0	0	0	0	3	7
5:30 PM	0	0	3	1	0	3	1	3	11
5:45 PM	0	0	1	0	0	1	0	1	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	22	30	13	17	12	17	111
APPROACH %'s :			42.31%	57.69%	43.33%	56.67%	41.38%	58.62%	
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	0	11	3	1	6	2	8	31
PEAK HR FACTOR :			0.688	0.375	0.250	0.500	0.500	0.667	0.705
			0.700		0.583		0.625		

Prepared by National Data & Surveying Services

Meridian Ave & Oak St

Peak Hour Turning Movement Count

ID: 20-05030-001
City: South Pasadena

Day: Wednesday
Date: 01/22/2020

Meridian Ave

SOUTHBOUND

PEAK HOURS								COUNT PERIODS
07:30 AM - 08:30 AM	AM	0	424	102	0	526	AM	07:00 AM - 09:00 AM
12:00 PM - 01:00 PM	NOON	0	194	13	0	231	NOON	11:00 AM - 01:00 PM
05:00 PM - 06:00 PM	PM	0	554	46	0	450	PM	02:00 PM - 06:00 PM

EASTBOUND (Oak St)

AM	NOON	PM		
0	0	0	⇦	
0	0	0	↶	0
1	0	0	↱	0
0	0	0	→	1
0	0	0	↷	0
AM	NOON	PM		

WESTBOUND (Oak St)

PM	NOON	AM		
27	19	92	↰	0
0	0	0	←	1
22	11	22	↰	0
1	0	0	↶	0
68	26	229	⇨	
PM	NOON	AM		

	0	1	0	0
	↶	↓	↷	↶

	0	0	1	0
	↶	↰	↑	↱

CONTROL

1-Way Stop (WB)

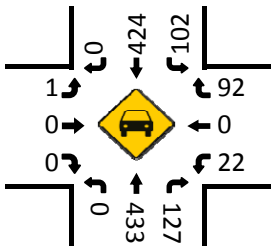
TEV	1201 AM	462 NOON	1094 PM
PHF	0.73	0.93	0.94

PM	576	0	0	423	21	PM	⇩	
NOON	205	0	0	212	13	NOON		
AM	446	0	0	433	127	AM		

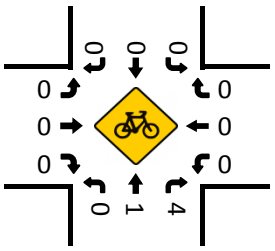
NORTHBOUND

Meridian Ave

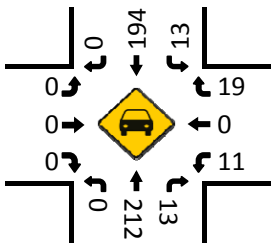
Total Vehicles (AM)



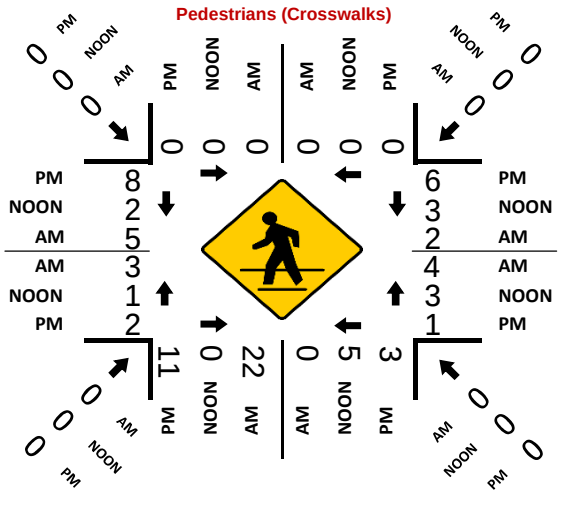
Bikes (AM)



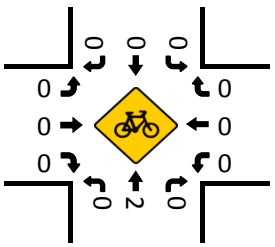
Total Vehicles (Noon)



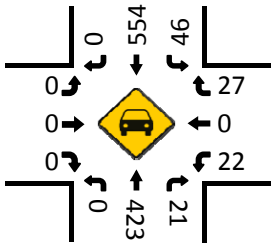
Pedestrians (Crosswalks)



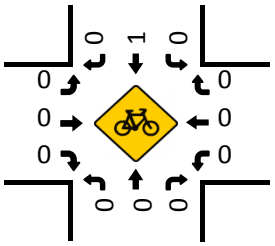
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Maple St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-002
Date: 1/22/2020

Total

NS/EW Streets:	Meridian Ave				Meridian Ave				Maple St				Maple St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	32	1	0	25	45	0	0	0	0	0	0	1	0	39	0	143
7:15 AM	0	56	2	0	23	45	0	0	0	0	1	0	0	0	69	0	196
7:30 AM	0	86	1	0	28	61	0	0	0	0	0	0	2	0	61	0	239
7:45 AM	0	94	3	0	39	95	0	0	1	0	0	0	14	0	54	0	300
8:00 AM	0	38	11	0	46	89	0	0	0	0	0	0	11	0	40	0	235
8:15 AM	0	46	6	0	54	40	0	0	0	0	0	0	2	0	37	0	185
8:30 AM	0	55	1	0	38	36	0	0	0	0	0	0	3	0	56	0	189
8:45 AM	0	36	6	0	31	39	0	0	0	0	0	0	2	0	43	0	157
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	443	31	0	284	450	0	0	1	0	1	0	35	0	399	0	1644
APPROACH %'s :	0.00%	93.46%	6.54%	0.00%	38.69%	61.31%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	8.06%	0.00%	91.94%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	274	17	0	136	290	0	0	1	0	1	0	27	0	224	0	970
PEAK HR FACTOR :	0.000	0.729	0.386	0.000	0.739	0.763	0.000	0.000	0.250	0.000	0.250	0.000	0.482	0.000	0.812	0.000	0.808
		0.750				0.789				0.500				0.909			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	17	6	0	10	29	0	0	0	0	0	0	3	0	29	0	94
11:15 AM	0	26	5	1	9	32	0	0	0	0	0	0	1	0	18	0	92
11:30 AM	0	31	2	0	11	40	0	0	0	0	0	0	0	0	15	0	99
11:45 AM	0	30	3	0	7	38	0	0	0	0	0	0	1	0	27	0	106
12:00 PM	0	29	3	0	9	26	0	0	0	0	0	0	0	0	22	1	90
12:15 PM	0	39	0	0	11	44	0	0	0	0	0	0	2	0	20	0	116
12:30 PM	0	25	1	0	5	37	0	0	0	0	0	0	2	0	16	0	86
12:45 PM	0	31	1	0	10	41	0	0	0	0	0	0	1	0	25	0	109
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	228	21	1	72	287	0	0	0	0	0	0	10	0	172	1	792
APPROACH %'s :	0.00%	91.20%	8.40%	0.40%	20.06%	79.94%	0.00%	0.00%					5.46%	0.00%	93.99%	0.55%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	129	8	0	38	148	0	0	0	0	0	0	3	0	84	1	411
PEAK HR FACTOR :	0.000	0.827	0.667	0.000	0.864	0.841	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.778	0.250	0.886
		0.878				0.845								0.786			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	23	3	0	14	42	0	0	0	0	0	0	4	0	23	0	109
2:15 PM	0	30	2	0	13	58	0	0	1	0	0	0	2	0	28	0	134
2:30 PM	0	38	5	0	22	36	0	0	0	0	0	0	5	0	41	0	147
2:45 PM	0	55	3	0	22	56	0	0	0	0	0	0	7	0	39	0	182
3:00 PM	0	48	3	0	18	65	0	0	0	0	0	0	2	0	38	0	174
3:15 PM	0	19	0	0	30	58	1	0	0	0	0	0	1	0	41	0	150
3:30 PM	0	33	1	0	25	66	0	0	0	0	0	0	0	0	25	0	150
3:45 PM	0	37	3	0	19	50	0	0	0	0	0	0	1	0	39	0	149
4:00 PM	0	37	3	0	25	65	0	0	0	0	0	0	3	0	37	0	170
4:15 PM	0	48	0	0	35	61	0	0	0	0	0	0	2	0	48	0	194
4:30 PM	0	37	1	0	32	55	0	0	0	0	0	0	2	0	44	0	171
4:45 PM	0	44	2	0	35	49	0	0	0	0	0	0	3	0	38	0	171
5:00 PM	0	40	0	0	42	96	0	0	0	0	0	0	2	0	61	0	241
5:15 PM	0	46	2	0	34	87	0	0	0	0	0	0	1	0	56	0	226
5:30 PM	0	34	1	0	30	86	0	0	0	0	0	0	5	1	71	0	228
5:45 PM	0	43	0	0	30	84	0	0	0	0	0	0	2	0	58	0	217
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	612	29	0	426	1014	1	0	1	0	0	0	42	1	687	0	2813
APPROACH %'s :	0.00%	95.48%	4.52%	0.00%	29.56%	70.37%	0.07%	0.00%	100.00%	0.00%	0.00%	0.00%	5.75%	0.14%	94.11%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	163	3	0	136	353	0	0	0	0	0	0	10	1	246	0	912
PEAK HR FACTOR :	0.000	0.886	0.375	0.000	0.810	0.919	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.866	0.000	0.946
		0.865				0.886								0.834			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Maple St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-002
Date: 1/22/2020

Bikes

NS/EW Streets:	Meridian Ave				Meridian Ave				Maple St				Maple St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	1	0	0	0	0	0	0	0	0	2	0	6
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500
	0.250												0.250				

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.250				0.250												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
4:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	5	0	0	0	0	0	0	1	0	1	0	10
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					50.00%	0.00%	50.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Maple St
City: South Pasadena
Project ID: 20-05030-002
Date: 1/22/2020

Pedestrians (Crosswalks)

NS/EW Streets:	Meridian Ave		Meridian Ave		Maple St		Maple St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	3	3
7:15 AM	0	0	0	0	0	0	3	0	3
7:30 AM	1	0	0	0	6	1	3	0	11
7:45 AM	1	0	0	0	0	0	3	1	5
8:00 AM	0	2	0	0	2	0	1	3	8
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	3	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	2	0	0	9	1	10	10	34
APPROACH %'s :	50.00%	50.00%			90.00%	10.00%	50.00%	50.00%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	2	2	0	0	8	1	10	4	27
PEAK HR FACTOR :	0.500	0.250			0.333	0.250	0.833	0.333	0.614
	0.500				0.321		0.875		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	2	0	0	0	1	1	1	0	5
11:15 AM	0	1	0	0	0	1	0	3	5
11:30 AM	1	0	0	0	0	0	5	0	6
11:45 AM	0	0	0	1	0	0	1	1	3
12:00 PM	0	0	0	0	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	1	2	3
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	1	0	1	1	2	8	7	23
APPROACH %'s :	75.00%	25.00%	0.00%	100.00%	33.33%	66.67%	53.33%	46.67%	
PEAK HR :	11:30 AM - 12:30 PM								TOTAL
PEAK HR VOL :	1	0	0	1	0	0	7	4	13
PEAK HR FACTOR :	0.250			0.250			0.350	0.500	0.542
	0.250		0.250				0.550		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	2	0	0	2
2:15 PM	0	1	0	0	1	0	1	0	3
2:30 PM	0	0	0	0	0	0	1	1	2
2:45 PM	0	0	0	0	4	0	1	1	6
3:00 PM	1	0	0	0	1	3	1	2	8
3:15 PM	2	1	0	0	1	1	2	4	11
3:30 PM	1	0	0	0	1	4	2	0	8
3:45 PM	0	0	0	0	0	0	0	1	1
4:00 PM	0	0	0	0	0	1	4	1	6
4:15 PM	0	1	0	0	2	3	2	1	9
4:30 PM	0	0	0	0	0	3	2	3	8
4:45 PM	0	0	0	0	2	0	3	0	5
5:00 PM	0	0	0	0	0	3	2	6	11
5:15 PM	0	1	0	0	0	4	5	1	11
5:30 PM	0	0	0	0	3	0	5	3	11
5:45 PM	2	1	0	0	1	5	3	1	13
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	5	0	0	16	29	34	25	115
APPROACH %'s :	54.55%	45.45%			35.56%	64.44%	57.63%	42.37%	
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	2	2	0	0	4	12	15	11	46
PEAK HR FACTOR :	0.250	0.500			0.333	0.600	0.750	0.458	0.885
	0.333				0.667		0.813		

Prepared by National Data & Surveying Services

Meridian Ave & Maple St

Peak Hour Turning Movement Count

ID: 20-05030-002
City: South Pasadena

Day: Wednesday
Date: 01/22/2020

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	11:30 AM - 12:30 PM
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	11:00 AM - 01:00 PM
PM	02:00 PM - 06:00 PM

Meridian Ave — SOUTHBOUND

AM	0	290	136	0	499	AM
NOON	0	148	38	0	213	NOON
PM	0	353	136	0	409	PM

Maple St — EASTBOUND

AM	NOON	PM		
0	0	1	⇦	
0	0	0	↶	0
1	0	0	↱	0
0	0	0	→	1
1	0	0	↴	0
AM	NOON	PM		

CONTROL

1-Way Stop (WB)

TEV	970 AM	411 NOON	912 PM
PHF	0.81	0.89	0.95

WESTBOUND — Maple St

	PM	NOON	AM	
0	246	84	224	↰
1	1	0	0	←
0	10	3	27	↰
0	0	1	0	↶
	139	47	153	⇨
	PM	NOON	AM	

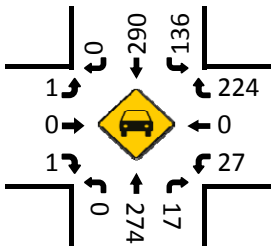
Meridian Ave — NORTHBOUND

PM	363	0	0	163	3	PM
NOON	151	0	0	129	8	NOON
AM	318	0	0	274	17	AM

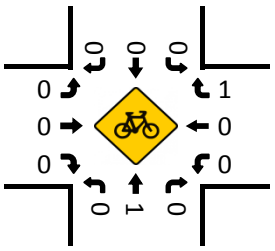
0 0 1 0 (↰ ← ↑ ↱)

0 1 0 0 (↶ ↱ → ↴)

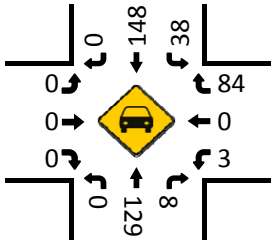
Total Vehicles (AM)



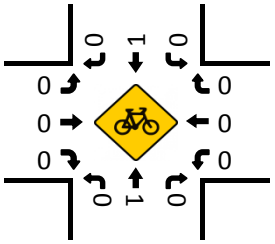
Bikes (AM)



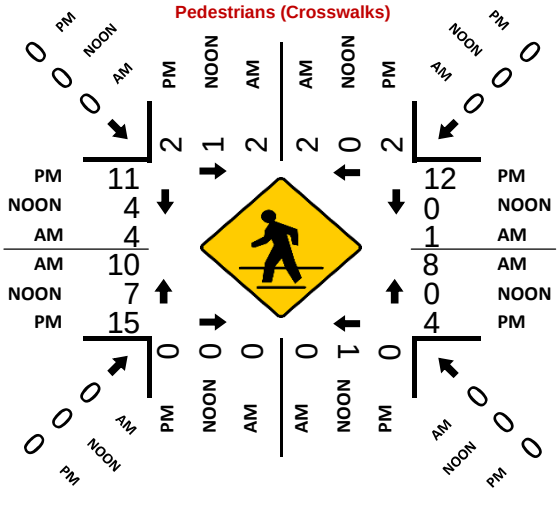
Total Vehicles (Noon)



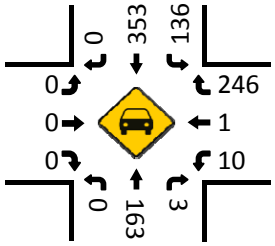
Bikes (NOON)



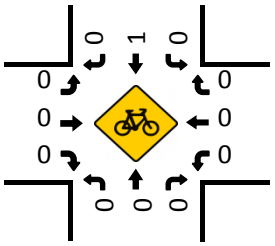
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Pine St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-003
Date: 1/22/2020

Total

NS/EW Streets:	Meridian Ave				Meridian Ave				Pine St				Pine St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	69	2	0	1	69	0	0	0	0	0	0	2	0	9	0	152
7:15 AM	0	128	2	0	0	65	0	0	0	0	0	0	0	0	9	0	204
7:30 AM	0	160	1	0	4	84	0	0	0	0	0	0	2	0	10	0	261
7:45 AM	0	155	4	0	12	119	0	0	0	0	0	0	12	0	23	0	325
8:00 AM	0	85	5	0	8	121	0	0	0	0	0	0	11	0	10	0	240
8:15 AM	0	75	8	0	18	96	0	0	0	0	0	0	0	0	9	0	206
8:30 AM	0	111	2	0	7	73	0	0	0	0	0	0	3	0	12	0	208
8:45 AM	0	84	1	0	7	69	0	0	0	0	0	0	0	0	10	0	171
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	867	25	0	57	696	0	0	0	0	0	0	30	0	92	0	1767
APPROACH %'s :	0.00%	97.20%	2.80%	0.00%	7.57%	92.43%	0.00%	0.00%					24.59%	0.00%	75.41%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	475	18	0	42	420	0	0	0	0	0	0	25	0	52	0	1032
PEAK HR FACTOR :	0.000	0.742	0.563	0.000	0.583	0.868	0.000	0.000	0.000	0.000	0.000	0.000	0.521	0.000	0.565	0.000	0.794
		0.766				0.882								0.550			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	46	1	0	1	40	0	1	0	0	0	0	0	0	4	0	93
11:15 AM	0	46	3	0	3	40	0	0	0	0	0	0	2	0	5	0	99
11:30 AM	0	45	0	0	3	50	0	0	0	0	0	0	2	0	9	0	109
11:45 AM	0	59	1	0	3	43	0	0	0	0	0	0	2	0	7	0	115
12:00 PM	0	49	2	0	2	35	0	0	0	0	0	0	0	0	3	0	91
12:15 PM	0	61	0	0	2	54	0	0	0	0	0	0	0	0	5	0	122
12:30 PM	0	47	3	0	1	46	0	0	0	0	0	0	2	0	6	0	105
12:45 PM	0	52	1	0	6	50	0	0	0	0	0	0	1	0	6	0	116
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	405	11	0	21	358	0	1	0	0	0	0	9	0	45	0	850
APPROACH %'s :	0.00%	97.36%	2.64%	0.00%	5.53%	94.21%	0.00%	0.26%					16.67%	0.00%	83.33%	0.00%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	214	3	0	10	182	0	0	0	0	0	0	4	0	24	0	437
PEAK HR FACTOR :	0.000	0.877	0.375	0.000	0.833	0.843	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.667	0.000	0.895
		0.889				0.857								0.636			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	50	1	0	3	56	0	0	0	0	0	0	4	0	13	0	127
2:15 PM	0	55	2	0	2	69	0	0	0	0	0	0	5	0	6	0	139
2:30 PM	0	74	0	0	6	56	0	0	0	0	0	0	1	0	11	0	148
2:45 PM	0	94	5	0	7	73	0	0	0	0	0	0	7	0	13	0	199
3:00 PM	0	78	6	0	5	82	0	0	0	0	0	0	5	0	6	0	182
3:15 PM	0	61	1	0	7	93	0	0	0	0	0	0	0	0	15	0	177
3:30 PM	0	62	2	0	6	93	0	0	0	0	0	0	0	0	6	0	169
3:45 PM	0	75	1	0	3	68	0	1	0	0	0	0	0	0	4	0	152
4:00 PM	0	74	1	0	6	94	0	0	0	0	0	0	2	0	12	0	189
4:15 PM	0	93	2	0	4	95	0	0	0	0	0	0	3	0	14	0	211
4:30 PM	0	90	2	0	3	85	0	1	0	0	0	0	4	0	5	0	190
4:45 PM	0	79	2	0	9	92	0	0	0	0	0	0	2	0	2	0	186
5:00 PM	0	104	0	0	5	142	0	0	0	0	0	0	3	0	12	0	266
5:15 PM	0	106	5	0	11	120	0	0	0	0	0	0	3	0	8	0	253
5:30 PM	0	104	2	0	13	121	0	0	0	0	0	0	3	0	9	0	252
5:45 PM	0	102	0	0	8	121	0	0	0	0	0	0	2	0	11	0	244
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1301	32	0	98	1460	0	2	0	0	0	0	44	0	147	0	3084
APPROACH %'s :	0.00%	97.60%	2.40%	0.00%	6.28%	93.59%	0.00%	0.13%					23.04%	0.00%	76.96%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	416	7	0	37	504	0	0	0	0	0	0	11	0	40	0	1015
PEAK HR FACTOR :	0.000	0.981	0.350	0.000	0.712	0.887	0.000	0.000	0.000	0.000	0.000	0.000	0.917	0.000	0.833	0.000	0.954
		0.953				0.920								0.850			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Pine St
City: South Pasadena
Control: 1-Way Stop (WB)

Project ID: 20-05030-003
Date: 1/22/2020

Bikes

NS/EW Streets:	Meridian Ave				Meridian Ave				Pine St				Pine St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	80.00%	20.00%	0.00%													
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500																

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.250				0.250												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	0	6	0	0	0	0	0	0	0	0	0	0	9
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meridian Ave & Pine St
City: South Pasadena

Project ID: 20-05030-003
Date: 1/22/2020

Pedestrians (Crosswalks)

NS/EW Streets:	Meridian Ave		Meridian Ave		Pine St		Pine St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	5	1	0	0	6
7:45 AM	1	1	0	0	4	0	0	0	6
8:00 AM	0	0	0	0	3	0	0	0	3
8:15 AM	0	0	0	0	1	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	1	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	3	0	0	14	3	0	0	21
APPROACH %'s :	25.00%	75.00%			82.35%	17.65%			
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	1	1	0	0	13	2	0	0	17
PEAK HR FACTOR :	0.250	0.250			0.650	0.500			0.708
	0.250				0.625				

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	2	0	0	1	1	0	0	4
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	1	1	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	3	2	0	0	7
APPROACH %'s :	0.00%	100.00%			60.00%	40.00%			
PEAK HR :	11:30 AM - 12:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	1
PEAK HR FACTOR :					0.250				0.250
					0.250				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	1	0	0	1
2:15 PM	0	0	0	0	1	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	2	1	0	0	4
3:00 PM	0	2	0	3	5	5	0	0	15
3:15 PM	0	2	0	0	2	6	0	0	10
3:30 PM	0	0	1	0	2	0	0	0	3
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	1	0	0	0	1	5	0	0	7
4:15 PM	0	0	0	0	1	1	0	0	2
4:30 PM	1	1	0	1	1	1	0	0	5
4:45 PM	0	1	0	0	1	2	0	0	4
5:00 PM	0	0	0	0	0	4	0	0	4
5:15 PM	0	0	0	0	1	1	0	0	2
5:30 PM	0	0	0	1	1	5	0	0	7
5:45 PM	0	0	2	0	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	7	3	5	18	32	0	0	67
APPROACH %'s :	22.22%	77.78%	37.50%	62.50%	36.00%	64.00%			
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	2	1	2	10	0	0	15
PEAK HR FACTOR :			0.250	0.250	0.500	0.500			0.536
			0.375		0.500				

Prepared by National Data & Surveying Services

Meridian Ave & Pine St

Peak Hour Turning Movement Count

ID: 20-05030-003
City: South Pasadena

Day: Wednesday
Date: 01/22/2020

Meridian Ave

SOUTHBOUND

PEAK HOURS									COUNT PERIODS
07:30 AM - 08:30 AM	AM	0	420	42	0	527	AM		07:00 AM - 09:00 AM
11:30 AM - 12:30 PM	NOON	0	182	10	0	238	NOON		11:00 AM - 01:00 PM
05:00 PM - 06:00 PM	PM	0	504	37	0	456	PM		02:00 PM - 06:00 PM

Pine St — **EASTBOUND**

AM	NOON	PM				
0	0	0				
0	0	0				0
0	0	0				0
0	0	0				0
0	0	0				0
AM	NOON	PM				

WESTBOUND — **Pine St**

PM	NOON	AM	
40	24	52	0
0	0	0	1
11	4	25	0
0	0	0	0
44	13	60	
PM	NOON	AM	

CONTROL

1-Way Stop (WB)

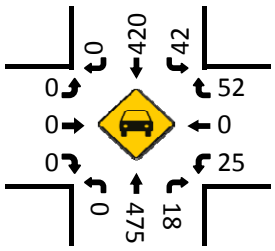
TEV	1032	437	1015
	AM	NOON	PM
PHF	0.79	0.90	0.95

	0	1	0	0	
PM	515	0	0	416	7 PM
NOON	186	0	0	214	3 NOON
AM	445	0	0	475	18 AM
		0	0	1	0

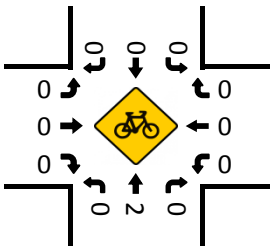
NORTHBOUND

Meridian Ave

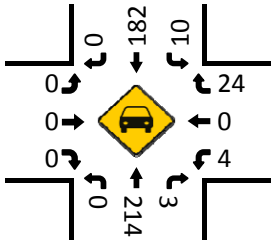
Total Vehicles (AM)



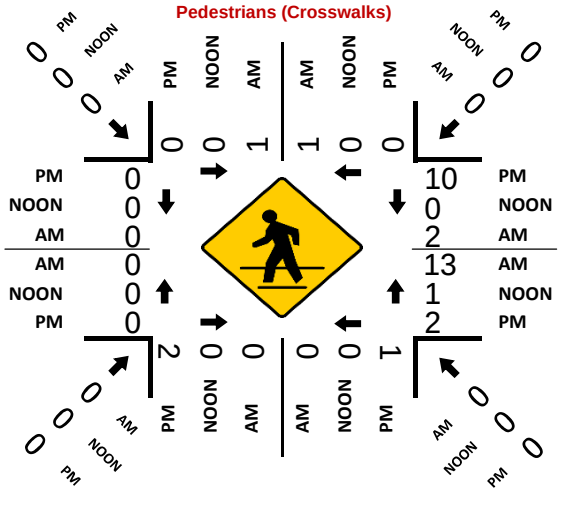
Bikes (AM)



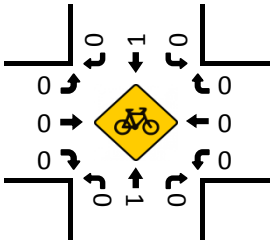
Total Vehicles (Noon)



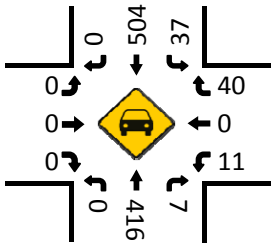
Pedestrians (Crosswalks)



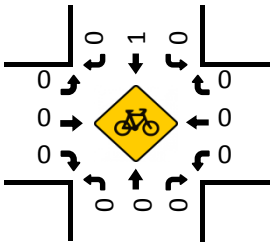
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



ATTACHMENT 1

Peer Review - Interwest

March 8, 2021

INTERWEST

MEMORANDUM

Mr. Shahid Abbas, Public Works Director

City of South Pasadena

Re: Meridian Avenue Stop Analysis

Mr. Abbas

Per your direction, I conducted a peer review of the Stop Analysis conducted by W.G. Zimmerman Engineering, Inc. dated May 6, 2020 for Meridian Avenue at Oak Street, Pine Street, and Maple Street.

My review consisted of field conditions, vehicular and non-vehicular traffic operation on Meridian Avenue and side streets including turning movements and site conditions at three intersections. My conclusions did not change the findings of the Meridian Avenue Stop Analysis.

Regards,

Mike Bagheri, P.E.

Interwest Group

ATTACHMENT 1

Miller Report

ROCK E. MILLER & ASSOCIATES
Traffic Engineering / Transportation Planning

April 13, 2021

Mr. Sean Joyce
City Manager
City of South Pasadena
1414 Mission Street
South Pasadena, CA 91030

Subject: Review and Evaluate Traffic Control needs on Meridian Avenue

Dear Sean;

I am pleased to provide this report regarding a review and evaluation of stop sign warrants or other potential traffic controls for Meridian Avenue at Oak Street, Pine Street, Maple Street and along the Meridian corridor.

Background

The City previously requested a review of the study area and intersections to see if they met the warrants for all-way stop control or other improvements. The previous studies indicated that the traffic levels were not high enough to meet National and State recommended values. The purpose of this report is to review the findings of the previous analyses and determine whether additional traffic controls may be appropriate.

The traffic information collected for the previous studies appears to be valid based upon my observations of the study area. Traffic volumes are typically 10% lower at this time based upon the continuing effects of the Covid pandemic, but this differential is not significant enough to affect recommendations.

Basis of Recommendations

The California Manual on Uniform Traffic Control Devices (MUTCD) establishes standards and guidance for use of traffic controls on public roadways in California. Cities in California are legally required to be consistent with the MUTCD. Standards in the MUTCD are "shall" conditions and are rarely violated except in unique circumstances. Standards include the red color and octagonal shape of stop signs. MUTCD guidelines are "Should" statements and provide some flexibility. The criteria in the MUTCD to determine whether locations are appropriate for all-way stop signs are guidelines. This allows some flexibility in placement of all-way stops on local streets within neighborhoods, but an engineering study is always advised when determining whether to follow a guideline.

I am considered an expert on the MUTCD. I teach classes to professionals on its use for the University of California Institute for Transportation Studies, and I am a voting member of the National Committee on Uniform Traffic Control Devices, a group that advises the Federal Highway Administration on the Federal Version of the MUTCD, the parent document of the California MUTCD. In these roles, I am familiar with the past, present, and probable future changes in the two Manuals.

5731 E. West View Drive, Orange CA 92869 (714) 743-1415 rock@RockEMiller.com

Prior Studies

The City recently conducted two analyses in the area. The May 2020 study of Meridian Avenue evaluated three potential all-way stop locations following strict consistency with the numerical guidelines in the MUTCD. The study concluded that none of the locations met the numerical criteria, generally known as "warrants", based upon traffic volumes, crash history, and speeds. This conclusion is technically correct, but the study did not consider whether any conditions might be apparent to consider recommendation of traffic controls that did not meet numerical the warrants in the MUTCD. The March 2021 study confirmed the conclusions of the May 2020 study.

Additional MUTCD Criteria

The current edition of the California MUTCD provides additional criteria for consideration in the potential use of all-way stop controls. The initial paragraph addressing their potential use is as follows:

"Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."

After its presentation of vehicle volume, speed and crash criteria, the California MUTCD provides these additional options that can help to determine whether an all-way stop is appropriate, as follows:

"Other criteria that may be considered in an engineering study include:

A. *The need to control left-turn conflicts;*
B. *The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian. volumes;*
c. *Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and*
D. *An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection."*

The California MUTCD clearly allows some flexibility as indicated above in applying its guidelines for consideration of all-way stop controls. Rigidly following the numerical guidelines in the MUTCD is most appropriate for higher volume locations where traffic signalization may be more appropriate, but MUTCD guidelines offer language to allow for flexibility for neighborhoods and local residential streets.

A popular misuse of all-way stop signs is for speed control, and the warrants are structured more to discourage random application of all-way stops if speed reduction is the goal. Before and after studies often find that speeds have increased slightly away from or between new all-way stop intersections. Noise, congestion, and fumes can increase near stop-controlled intersections. It is important to recognize that reduction of vehicle speeds may not be a great justification to install stop signs.

Ultimately, it is more important for the City to affirm an engineering recommendation to deviate from the numerical MUTCD warrants than to strictly follow them in a neighborhood scenario. If a City chooses to install a multiway stop, it is perhaps more important to consider the precedent and how it

might apply to other intersections in the City. Many cities, including Los Angeles and Alhambra have established alternate warrant systems for use of stop signs in neighborhoods. For example, Los Angeles has established a policy to allow all-way stop controls at nearly every 4-way intersection in the City that is not located along an arterial through route. These tend to reduce through traffic and alleviate sight distance visibility issues at intersections, since all traffic will be slowing. The action requires 10's of thousands of stop signs, but it has likely improved overall safety levels within neighborhoods.

Meridian Avenue Analysis

I have reviewed the traffic information and the local site conditions for each potential location along Meridian Avenue. In addition to the traffic volume information in the 2020 study, I reviewed the local conditions for each intersection and determined whether there are unrecognized advantages and unique circumstances at each intersection that might affect a final decision.

Meridian Avenue carries approximately 8000 vehicles per day. At this volume there can be challenges for crossing pedestrians and entering traffic at intersections. Motorists and pedestrians using cross streets will need to observe 6-7-second traffic gaps to turn onto or walk across the street. This suggests that sight distance of 250-300 feet is desirable especially at marked crosswalks. New stop signs generally will not result in extensive congestion at the existing traffic level of Meridian Avenue, if applied at intersections where cross traffic volume is lower than on Meridian. Also, traffic levels are unlikely to increase in the future to the range where traffic signals would ever be required.

Oak Street

Oak Street terminates at Meridian Avenue, but it continues to the east as a community collector, with an all-way stop at Ramona and traffic signals at Fremont and Fair Oaks.

Oak and Meridian meet at an acute angle, making it difficult to observe southbound traffic. Meridian is curving on the southbound approach and through the intersection. The skewed angle also increases the time required to make a left turn from Oak Street, requiring greater visibility of southbound traffic. The visibility from Oak Street to observe southbound traffic on Meridian is also limited by a hedge that is growing directly behind the sidewalk and by a utility pole. The sidewalk does not meet ADA width criteria at the utility pole.

A school crosswalk is located relatively far south from the center of the intersection because of the skewed angle. It is used by over 20 pedestrians in the AM peak hour, and use is likely related to nearby schools. The crosswalk also averages 15 or more pedestrians per hour from 2 pm to 5 pm, which likely includes both school and general neighborhood pedestrian traffic.

Based upon the unique intersection geometrics, the marked crosswalk, and the street usage further to the east, there is ample justification to conclude that all-way stops are appropriate for this location. Due to the unique geometrics, I would recommend that a plan be prepared to clearly indicate how to install the all-way stops and treat the crosswalk.

As a future consideration, I would study how the location could be improved to address ADA deficiencies and to allow relocation of the south crosswalk closer to the intersection or perhaps to the north leg. This would require street construction to widen the sidewalk into the street on the east side

to the north and move the curb toward the street to reduce the paved area on the southeast quadrant to " square off" the Oak Street approach. It would probably be in the $30-50,000 range.

Pine Street

Pine Street terminates at Meridian Avenue and continues to the east. It is wider than the other streets in the area, but it does not likely carry a large proportion of though traffic. There are no marked crosswalks at or near the intersection. Meridian Avenue has an unusual design on both sides of the intersection, because water is carried in a concrete gutter down the center of the street rather than along the curbs. This can affect how drivers use the street, and the appearance may help to reduce speeds.

Meridian Avenue curves south of Pine Street, limiting the visibility from Pine Street to observe northbound Meridian northbound traffic. The visibility is approximately 250 feet if no cars are parked and can be further limited by parked cars, trees, and a utility box. Some red curb has been added recently to the east curb north and south of the intersection, but the red curbing is not long enough to fully clear sight distance.

Traffic levels on Pine Street are much lower than levels on Oak and Maple Streets at their intersections with Meridian. Of the three locations, Pine Street has the fewest distinguishing factors for providing an all-way stop. Potential limitations to sight distance are perhaps the strongest justifying factor, and the drainage treatment along Pine Street makes the intersection unique. But if stops are approved at all three locations, there could be concerns raised about excessive stops within a short distance. Among other factors, being the middle intersection of the three, it would be the lowest priority.

There would likely be no large consequential issues if an all-way stop was provided at this intersection, but it may require more enforcement because of the low cross traffic volumes. If all way stop controls are not provided, lengthening of the red curb along the east side of Meridian to at least 30 feet north and south of the intersection would be advised. If all-way stops are added, the red curb would not require adjustment.

Maple Street

Maple Street terminates at Meridian Avenue and continues east across Huntington Drive for one block. There is a marked school crosswalk across the north leg. Maple intersects at a slight angle but not enough to affect turning vehicles. The traffic counts identified a high flow of traffic that turns right from westbound Maple to northbound Meridian, over 200 vehicles in both the AM and the PM peak hours. The corresponding left turn from Meridian is also high, nearly 150 vehicles in AM and PM peak hours. Sight distance visibility is good if no cars are parked along the east curb of Meridian, but a longer red curb prohibition would be required than what exists to provide better sight distance especially for pedestrians.

The traffic flow requirements are closer to meeting MUTCD guidelines at this intersection than at the other two intersections, and the location clearly meets the MUTCD criteria of two nearly equal residential streets. The high turning volume, sight distance limitations of parked cars, and the marked crosswalk are suitable special justification to consider an all-way stop at the location.

If the City decides not to pursue an all-way stop, additional red curb would be recommended on the east side of Meridian north and south of the intersection so that parking was prohibited for at least 30 feet. In addition, the school crosswalk on the north leg should have PED XING signs and more visible school area signs and markings at the crosswalk and in advance.

Conclusions

There are clear and unique factors at the Oak street and Maple Street intersections that would justify provision of all way stop controls based upon options in the California MUTCD. I can support a recommendation to change the controls at these intersections.

There are less evident special conditions at the Pine Street intersection. I would not criticize a decision by the city to install all-way stop controls at this location also, but the location does not appear to have unique factors or special justification that is found at the other two locations. I would prefer to advise the City of the merits and consequences of adding stop signs at the location and allow them to reach their decision, which would likely benefit from public input.

Please contact me if you have any questions.

Sincerely,

Rock Miller, P.E.
Consulting Traffic Engineer